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FOULSHAM'S
NEW GARDENING BOOK

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AND

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FOREWORD

Every year new houses are being built by the hundred thousand. Those who occupy these find a space which is merely a mass of rubbish, uneven in surface and that looks as if it will take years to get any kind of garden flowers to grow there, especially when only odd hours each week are available for doing the work.

It is the intention of the publishers and the authors of this book to show how, under such conditions as those described, a garden can be planned and flowers and vegetables can be growing to perfection in the course of a few weeks, or at the longest a few months, instead of, as is so often the case with those who have not such a guide as this, having to wait some two or three years for any real results.

Quick results in gardening are obtained by doing the work in the most straightforward way possible, without any lack of thoroughness, and choosing the right plants to grow in the garden. Great care has been taken to provide in the following pages exactly the information needed to be successful in making a garden for the new home in the shortest possible period.

In addition, certain popular vegetables and flowers which are favourites in almost every garden have been given separate sections. These have been dealt with in detail so that those who wish to grow them, may not only obtain results as quickly as possible, but they may rest assured that if the methods advocated here are followed, they will grow vegetables which are second to none in yield, quality and flavour, and flowers which are unsurpassed for brilliancy of colouring, for profuse blooming and length of flowering season, and which will take a high place, not only as cut flowers for decoration in the home, but will be of outstanding merit on the exhibition table.

Naturally the first thing the owner of a new garden will do is examine the soil. If he (or she) is fortunate, he will find that his land is of such a nature, that it is naturally well loaded with plant food, in which case he may begin working on it straight away with little or no need to give attention to soil improvement. This is an ideal which every owner of a new garden will not find. Mostly the soil will be too heavy or too light. It will be short of one or more essential plant foods, and before any seed sowing or planting can be done these must be supplied.

Mostly the kind of soil will tell a good deal as to the plant foods it contains. A sandy soil will contain different plant requirements from a clay soil; neither of these is perfect. A loamy soil with a good deal of fibrous matter in it will approach nearest to what is wanted.

The method of dealing with the different kinds of soils so that the best results are obtained for various plants is fully explained so that there should be no difficulty in this respect.

There is, however, another class; those who move into a new home where there is a garden which has been badly neglected by the former occupants. For this class also this book is a guide, as it is for those who are still living in the home they have occupied for years, but who are not satisfied that their garden is all that it can be; for in addition to telling how to begin making a garden and getting results in the shortest possible time, those who read this book carefully will find that there are numerous hints as to the best ways of improving existing gardens.

FOULSHAM'S NEW GARDENING BOOK

QUICK RESULTS IN YOUR FLOWER GARDEN

1.—What Sort of Garden Shall I Make?

The nature of the soil, and the areas of it that are sunny, or shady, for the best part of the daytime, must be noted whether the piece of ground that is to be made to yield a floral display quickly is no bigger than a back yard, or extends into a matter of acres. If the garden in the rough is not overshadowed, or but slightly shaded, by tall trees, high walls, or houses, and thus gets its fair share of all the sunlight and air going, the biggest possible selection of quickly-flowering plants can be drawn upon with every prospect of success. But where the conditions for growth are otherwise, and the space is largely shaded, the choice of flowering plants, and especially of those that will flower soon after planting, or sowing, is limited. Where the circumstances are thus, the wisest plan is to look for quick-flowering results mainly from the part of the garden that does get the light and warmth of the sun for quite half the day at least, however small that part may be.

Generally speaking, plants that flower in shade, and semi-shade, are of slow growth. The shady parts of the garden are to be depended upon, therefore, rather for a continuance of bloom, or for results a year or so after the first gay outbursts of flowers from the more favoured, sun-kissed spots.

The nature of the soil is ruled by the geological formation of the land, that is to say, whether or not what is underneath the surface soil is rock, gravel, sand, or clay, or a mixture of two or more of these. After that it will be found that the condition in which the soil is found to be, whether friable and light, or heavy and sodden, is the result of its exposure, or not, to the sun and whether or not it has been already dug over, and cultivated at some time or other fairly recently.

As a heavy soil is unsuited to the majority of quick-flowering plants the first thing to be done as a rule is to dig it all over, to the depth of a spade at least, leaving it exposed to the action of sun and weather for a week or two (all winter if possible if the work is done in late autumn) before planting either seeds or plants. Where the soil is naturally light and friable digging it over thus once or twice will bring it into a suitable state to be planted; but where this is not the case it should be dug over several times, at intervals of a week or so, according to the season—shorter intervals between each digging in summer than in winter—until it is easily broken up with a hand-fork, and raked into a fine tilth.

Do not worry about the removal of small stones. They are helpful for drainage. Set aside the large ones. Nothing will grow upon them, unless they are soft sandstone, and they will be useful in the making of paths, and rock-work if an Alpine garden is to be planned. An admixture of coarse sand will lighten the tilth of heavy clay land, along with repeated digging. Rotted stable manure or rotted vegetable refuse will improve very light or sandy soils for general flower-growing purposes. An admixture of old, turfy loam, or leaf soil, improves all soils for flower-growing.

A sense of privacy seems necessary to most of us for the full enjoyment of our gardens, whether they are small or large. The larger the garden the easier it becomes to screen it from the outside world, although only in very large gardens can we afford to overlook entirely special arrangements for the provision of seclusion. In the small, suburban garden anything in the shape of a real retreat for leisure hours may become acutely hard to arrange. Though it is true that the ultimate boundary-line screen of a garden of this sort must be trellis of some kind atop the fence or wall, there is rarely any reason why this very plain limit to the extent of the garden should be much in evidence. There is a variety of quickly growing, flowering climbers to smother the trellis in leafage and flowers within two or three months, from April onwards until August; while if a screen of roses is preferred, or of some climbing shrub or other, they can all be bought in growing condition in pots, and their development will go on unchecked (November to February is, of course, the season for planting such things bought as dormant roots out of pots) though the season is

advanced if the root and entire contents of the pot are most carefully placed, undisturbed, in the hole dug for its reception, filling in good, fine soil which should then be pressed down gently but firmly.

It is not a good plan to tread in the soil around roses, etc., from pots, as is usual when planting them in winter, in the ordinary way, because the treading will certainly break and disturb the root ball, dislodging the tiny, hair-like feeding rootlets, and checking the growth if not actually causing the plant to die off.

Natural Boundary Screens.

Climbers on thin fir poles, or green painted stakes positioned at intervals fairly near the trellis screen, that is to say, not too near to it to shut out sun and air from the climbers growing upon and over the trellis, help to further camouflage the boundary of the garden by breaking up the straight formal line of the trellis itself.

Almost any kind of annual climbing plant will do for these poles. Drive in a large nail at right angles to the pole, top and bottom, stretching stout, weatherproofed string from nail to nail. Most annual climbers twine themselves spirally around cords so arranged, or cling to them by their leaf stems.

Most charming use can be made in this way of sweet peas. Either place close together two or three bushy and upright pea sticks, around which plant three or four sturdy sweet pea plants; or else grow the sweet peas on stakes, on the cordon or exhibition system.

As applied to sweet peas the word "cordon" has scarcely the same meaning as when used in connection with the growing of fruit trees and bushes. It means that the sweet pea plants, which have been pinched out at the second leaf to produce two or three sturdy side shoots instead of one, long central stem, are lightly but firmly tied with raffia grass, or soft string, to the stakes as growth proceeds, instead of clinging to pea sticks by their own tendrils in the natural way.

The best stakes to use are straight willow stakes or bamboos. Dip the bottom six or seven inches of each stake in creosote before pushing these ends into the earth, firmly, in threes, to the shape of a triangle, with six inches from stake to stake. Tie the tops firmly together with thin wire, or weatherproofed cord. These stakes may be quite six feet tall. One, or perhaps two young sweet pea plants planted in nice rich compost within the triangle formed by the stakes will send forth enough shoots to tie to the stakes and form a neat pillar of blossom and tender green leaves instead of the more or less untidy pillars resulting from the use of pea sticks. The plan is more troublesome than pea sticks, but worth while in neatness, and better flowering results.

A Use for Tall Plants.

If the new garden is being planned in spring, some time between the end of February and the end of April, any of the tall growing hardy perennials can be used between the climbers on poles, or the pillars of sweet peas, or instead of any of these, to form a natural boundary line screening the formality of the trellis one. If these perennials are in good, sturdy clumps, showing four to six leaf stems, and plenty of fibrous root growth, they will make good leafy plants and flower well the same summer if soil and position are suitable.

These, then, are several ways of disposing of the difficulty of screening the boundary line of the garden. Whatever is attempted in this way should be informal, and contrived by means of growing plants. Close trellis, unadorned by plants, is effective and neat in its way when well done, but it only makes the limitations of the garden plainer, and increases the shut-in feeling so commonly experienced in small gardens whose extent is too plainly held within the necessary, and glaringly evident, party fences, or walls. There may arise occasions when even those whose neighbourly feeling bubbles over into gossip may find thoughtfully arranged boundary screens a decided boon!

In a general way it may be said that the gardener is most likely to succeed with the kinds of plants for which he has a fancy, provided they are not of a kind that his soil, or situation are utterly unsuited to.

If the difficulty is only, or mainly, one of soil it may be possible to change the compost by the addition of the things lacking in it, or to form beds of suitable compost for the plants preferred. Where shade-loving plants are liked and the garden happens to be a sunny, open one, shade can be artificially managed by planting low-growing trees fairly closely as a barrier to the brightness of the noonday sunlight. But beyond the removal of large trees that may be responsible for a shady garden, nothing can be done to convert such a situation to the needs of sun-loving plants.

Feeding the Plants.

After the soil has been got into nice, loose, friable condition by digging, the early flowering of quick-growing plants can be encouraged by the judicious use of suitable manures. Most amateurs seem to under-manure, or over-manure the ground so that the plants do badly as a result either of under-feeding, or over-feeding. In most cases manures can be used to greatest advantage, for flowering results, when the flower buds are first noticed.

Give moderate quantities in the form of a liquid, or powder, washing in afterwards with water—preferably soft—from a watering can with a fine rose, unless the rain helpfully comes along and does the job much better than hand watering can ever manage it.

The use of liquid, or powder manure for plants coming into bloom is best restricted to those having fibrous roots. For many bulbous subjects (such as liliums) liquid manure, especially if prepared from animal manure, proves harmful and induces disease, though, on the other hand, there are certain plants grown from corms (such as gladioli), that appreciate very much weak liquid manure at the flowering stage.

Vegetable manures are safe for practically all plants; animal, and mineral ones must be used with discrimination. For this reason the question of suitable manures for certain types of plants will be referred to in the later chapters where the plants for quick-flowering results are dealt with in detail.

Thinning out seedling plants of Hardy Annuals, and Half-hardy Annuals, as soon as they are big enough to handle, which will be when the second, or third leaves have been formed, is most helpful in encouraging quick growth, and therefore early flowering. More than this it allows the plants to become large, well-grown specimens, which they cannot grow into if allowed to crowd each other out of existence. Indeed, inattention to this simple detail of cultivation is often responsible for disappointing results from Annuals whether hardy, i.e. capable of being sown, and grown entirely outdoors, or half-hardy, i.e. which have to be sown under glass, or else not until warm weather outdoors, in early May as a rule, makes protection for the seedlings unnecessary.

2.—Plant Foods for Various Uses; Pathways and Garden Carpentry

Plants do not depend entirely on what is in the soil for their food; to an extent they are also dependent upon the atmosphere and, while the seed is germinating, upon the starchy substances in the seed itself from which the young plant (like the young animal within the parent, or the young bird within its shell) is nourished until old enough to live by itself without such very special food.

In choosing foods, that is to say, manures, for plants when they are old enough to benefit from such additions to the soil in which they are growing we must make up our minds for certainty what it is, if anything, that the plant stands in need of over and above what it is getting from its growing compost, or soil.

A too spindly habit of growth, for instance, is most probably not due to insufficient food (manure) in the soil but to bad lighting. When seedlings appear above the soil they should very soon expand their first pair of (seed) leaves. If, on the contrary, an inch or so of stem growth is made before the leaves expand, there is faulty lighting in the frame or greenhouse, which is too much in the shade; or the seeds have been sown too much in shade outdoors, and are in consequence being drawn upwards to try to get some sunlight.

Should this not be set right, a spindly, weakly habit of growth follows; and the same thing happens of course when the seedlings grow too closely together, indoors, or out-doors. An addition of manure, solid, or in liquid form, would only make the trouble worse in such cases. What is wanted is all the light and air possible, without exposing the plants to the risk of frosts if they are of tender sorts.

Unhealthy Foliage and Growth.

But if the stems and leaves are an unhealthy yellowish green hue when they ought to be, probably, a pronounced shade of green, either a good yellow-green, blue-green, or grey-green, and they have not got the slightly oily, shiny surface of healthy stems and leaves, very likely the compost in which they are growing needs nitrogen added to it in some form or other. What are called nitrogenous manures have the effect of imparting a darker, richer green tint to the foliage. They quickly disappear from the soil, however, and for this reason are generally applied, when necessary (as indicated by poorly-coloured foliage which really means that the plant, so to say, is suffering from anæmia) while plants are in active growth, and before they have begun to flower, or fruit, i.e. seed.

When the soil is kept loose, and friable as already advised, a certain amount of nitrogen penetrates to the roots from the atmosphere. Nitrogen is also released from small swellings, or nodules, on the roots of certain plants, especially peas and beans, for which reason plenty of sweet peas in the garden are distinctly useful (for the plants afterwards grown on the same ground) as well as beautiful. Nitrogenous manures that may be bought at most seed stores are: sodium nitrate, ammonium sulphate, ammonium chloride, and Peruvian guano. Stir a pinch or two into the soil around the roots of the plants that have sickly-looking foliage.

Animal and Vegetable Manures.

This class of extra plant food (chemical manures) may not supply all that the plants want to enable them to flower well and quickly, according to their kind. Either animal or vegetable manures, which are known as organic manures, are far more likely to be of substantial use as plant foods throughout the full time of growth.

Animal manures should always be thoroughly rotted, a condition that is helped on by mixing with soil, and turning the heap over from time to time. Horse manure is best, but fowl, rabbit, and goat manure, as well, of course, as sheep, pig, and cow manure (three animal manures scarcely likely, however, to be available for the average householder) may all be used on light lands if completely rotted, otherwise they may induce rank, sappy growth that will not be likely to produce flower buds quickly, if at all.

All these kinds of organic manures may be used more freely on light soils than on heavy soils, and are best dug into the ground in autumn. Heavy, clay soils will benefit by the addition of sand, and vegetable manures, which may be dug into the land at any time.

Leaf soil compost, peat soil, silver sand, and loam (the undersides of the turves off old meadowland) are all obtainable from seedsmen's shops. They are the safest manures for the inexperienced gardener to use, though their effect is mild, compared with animal and chemical manures. For many plants they are absolutely necessary, especially the leaf soil (or leaf mould) and loam, unless one's garden soil happens to be, fortunately, of such a rich compost.

The gardener can make excellent vegetable manure for himself by keeping a compost heap in the corner of the garden. Place upon it all sorts of unwanted vegetable refuse, excepting roots and seeds of perennial weeds. Turn over occasionally, mixing with it some spadefuls of earth to hasten forward the decay of the material into manure.

Liquid Manure.

Besides encouraging the opening of flower buds, and prolonging the period of flowering (when the seed pods are being snipped off regularly as well), liquid manure is a convenient form of applying extra food to growing plants of many kinds, as we have indicated. Liquid manure may readily be made by stirring well a little rotted animal manure, or guano, in water, preferably rain water, the solid being allowed to sink to the bottom of the vessel before the liquid is used. Soot water is also helpful as a mild stimulant.

If rain water is not available for watering the garden the tap or pump water should be drawn off into an open cask, or large footbath, and allowed to stand in the open air for some hours to warm it suitably for use. Plants readily chill and wither up as a result of having cold water thoughtlessly poured over their roots when heated in the warm soil on a hot, summer day.

How to Water Flowering Plants.

Watering is really best when managed by means of an ordinary watering can with a fairly fine rose, though the plan is more laborious than watering with a hose-pipe. When hose-pipe watering is adopted always use a fine rose, and if this system of watering is used for seedlings, and fragile plants, turn the rose upwards over them so that the moisture descends in a dewing shower rather than a heavy downpour, which may easily break the stems and beat them into the soil. If the earth becomes caked as the result of watering, it must be stirred loose with a hand fork. Keeping the surface soil loose and friable with a fork, light hoe, or rake, conserves moisture, and is preferable to too much watering.

It is a mistake to think, however, that this stirring of the soil, or even mulching with dry grass, or leaf soil, can replace watering, for an indefinite period. Surface attention of this kind can only be regarded as of use in avoiding over-watering.

The omission to keep the surface of the soil open and friable and allowing it to remain caked, after hand watering, causes mischief; not the watering itself when not over-done. If there is not enough moisture at the roots of a plant for its needs when the flower buds are swelling, and about to open, poorly coloured, undersized, and badly-shaped flowers are likely to be the result. In the case of certain plants drought at the roots will cause the flowers to drop off soon after opening.

Planning and Making Pathways.

Pathways in the garden should lead definitely somewhere, even if it is only to the innocent looking clump of tall herbaceous plants, pillars of sweet peas, or rose bushes that conceal the unsightly, but necessary manure heap!

To make the utmost use of the sun-favoured parts of the garden try to plan the pathways on the shady areas as far as possible, though it should be borne in mind that in the modern garden where crazy-paving pathways are the rule, even when the general plan of the borders is not for the accommodation of Alpines, the pathway is often, itself, a flower-growing surface

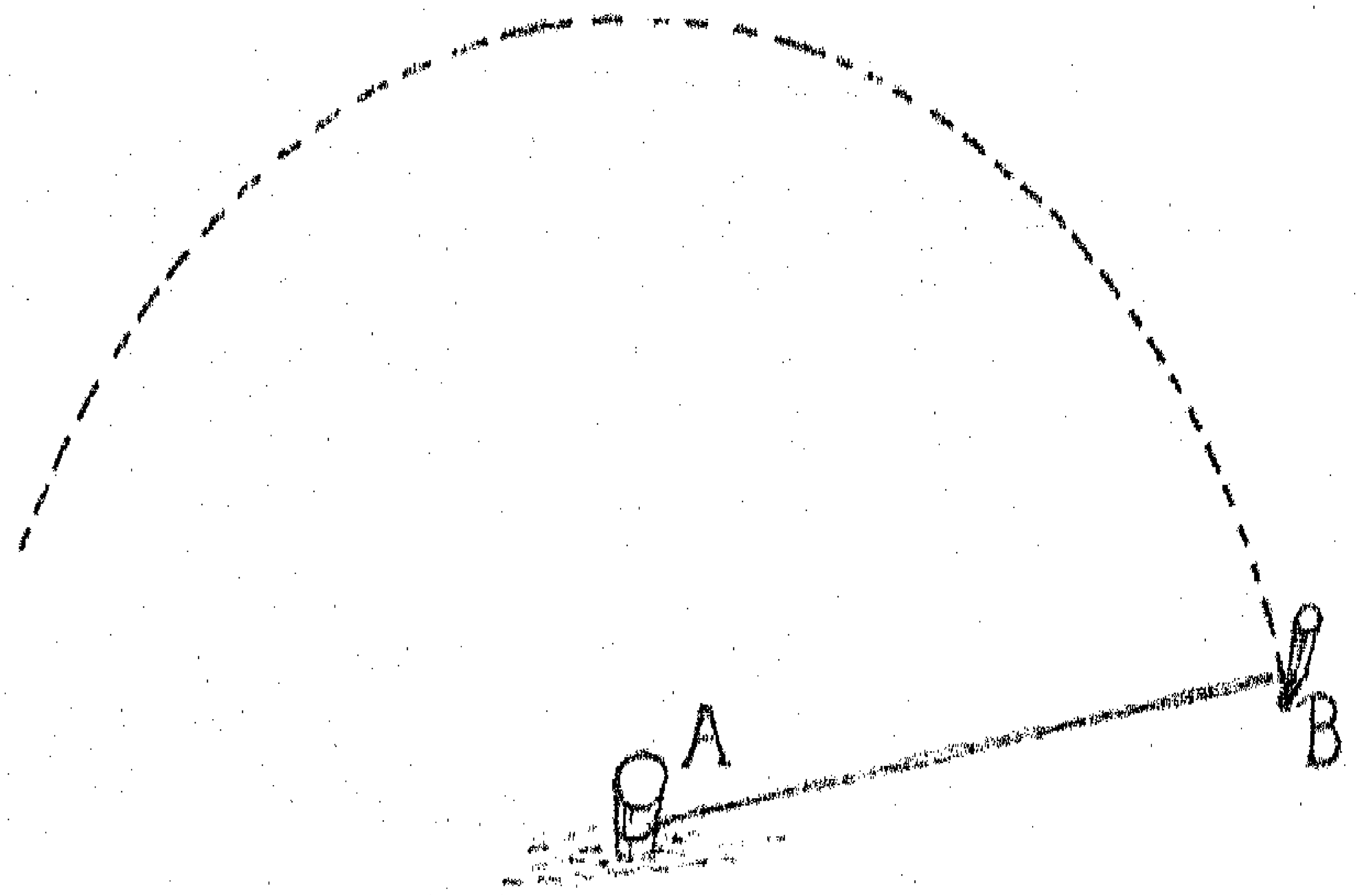

Fig. 1.—Marking Out a Circular Bed.
A.—Stake at centre. B.—Marking Peg joined to A by cord.

that can be managed to provide a display of charming, brightly-coloured subjects as quickly as the borders themselves.

Pathways must have a foundation of stone, clinkers, or brick rubble, if they are to be kept clean to walk upon during rainy as well as fine weather. A low edging of tiles, wood or cement to a pathway prevents the earth of the borders from being washed on to the path by heavy rains, and does much to keep the footway clean. The straight formality of such an edging is easily hidden by a border of some low, dense-growing plant, flowering freely all summer, such as one of the varieties of *Viola Cornuto*. In this way the edging plant helps to swell the general floral show.

Pergolas for Quick-flowering Climbers.

There is no denying the charm imparted to any formal garden plan by the skilful use of pergolas, and rustic archways, though in the small garden they must be kept within limits or one may be unable to see the garden for the pergolas! Quickly flowering climbing plants belong, mostly, to the hardy and half-hardy annual classes which are thin and soft-stemmed. As we have seen, there are also perennial climbers, such as roses and clematis, that can be bought growing in pots to be carefully planted out in their flowering positions, and trained over trellis, pergolas, or arches even while actually blooming without suffering a check to their growth.

But these also are thin-stemmed. Thick-stemmed perennial climbers such as Magnolia, Wisteria, and pillar roses do not lend themselves to what is, literally, bedding out, in this way, for if bought growing in pots as immature specimens, they are too young to be of much use for flowering that season and are thus most satisfactory when planted at the proper season—autumn and very early spring—for shrubs and other perennials as a class. The light larch poles suited to the quick-growing climbers make poor supports within a year or so for these thick-stemmed climbers as mature plants.

Supports for Thin-stemmed Climbers.

Although light, thin poles are best suited for the construction of pergolas, etc. to support thin-stemmed, quickly-flowering climbers, there is no reason at all why the structures of this kind should not be put up firmly, and neatly, like those intended for plants of more permanent value.

Whatever the pattern of the pergola, trellis screen, or archway, creosote the ends of the upright which are to be put into the earth, and secure with bolts and nuts the crosspieces, or at least the main crosspieces, joining the uprights together. Many of the annual climbers make quite respectable leafage when well grown, and if they are clinging to a flimsily put-up structure a summer gale may easily bring the whole thing toppling to earth, not only ruining the climbers, but creating a tangle of stakes, poles, and sappy, bruised stems that is tedious to clear up and has probably crushed the plants, upon which it has been blown, growing in the immediate neighbourhood.

There is another practical reason why the upright poles of pergolas, etc. for even annual climbers should be fairly stout, and that is so that nails may be driven into them, top and bottom, and at one or two points between, upon which the weatherproof cords, as already mentioned, may be tightly stretched for the plants to cling to in their upward growth.

You will find *How to Make Garden Structures* by Edward Hobbs (Foulsham, 1s. net) an extremely helpful guide to the making of all sorts of things for the garden.

3.—A Gay Garden of Annuals.

A garden of annuals, both hardy and half-hardy, possesses the advantages of low outlay, quick and reasonably sure flowering results, and a practically endless variety of types of plants, tall, medium, and low-growing, of bushy, and climbing habits, and almost limitless tints of the primary colours, and white.

Many gardeners fail to realise the full beauty and possibilities of this class of plants because they have never troubled to grow them carefully; for, unless carefully grown and strictly guarded against over-crowding, many annuals disappoint by flowering as weedy, straggly-looking specimens which are really badly developed for their kind, and almost lacking in the charm they would have had with only a little ordinary care and commonsense such as the same gardener would have felt bound to give to the (to him) more choice perennials, and biennials.

As a matter of fact, there are many biennials and perennials that can be got to flower the first season from seed, and are often treated as annuals, generally on the "half-hardy" principle of sowing in the first months of the year to flower the same summer; but they will be dealt with in their places in subsequent chapters.

We are only concerned, for the present, with *bona-fide* annuals, of the hardy and half-hardy types. In their ranks are included many plants of fragile beauty, and their numbers are being added to every season by fresh acquisitions from abroad, largely from South Africa, which have been acclimatised to this climate. It is a mistake, too, to regard annuals as purely border subjects. As we shall see, this class includes several genuine Alpines of the utmost value in quickly supplying bright patches of bloom in newly constructed rock gardens which rarely look attractive otherwise until matured by several years' growth of the perennials, many of them slow-growing subjects, that are their usual denizens.

Sowing Seeds of Annuals.

So far as we (liable to err in weather wisdom) can plan, the time to sow seeds out of doors whether they are the seeds of hardy or half-hardy annuals, must be governed by the weather, to a certain extent.

By a "certain extent" one means, naturally, that the work cannot be postponed indefinitely for suitable weather. Even in mild districts none but the hardiest of plants, capable of standing the winter, need be sown after the end of September; and the end of July or the beginning of August may be regarded as the latest time to sow quick-growing subjects with a reasonable prospect of enjoying their flowering for a few weeks at least before the first severe frosts end the display.

On the other hand, supposing the new garden of quickly-flowering plants is mapped out late in the autumn, in October, or even early November if the weather is mild as it is, often in the South and West that month, some of the hardiest annuals may still germinate and make sufficient growth to face the winter, blooming very early in the spring, five to six months after sowing.

But it is with gardens entered into during spring and summer, with the hopes of getting quick-flowering results, that the value of annuals of all kinds is most likely to be seen, and the best weather to choose for sowing the seed is that which is neither too dry nor too moist. Light showers and warmth, after a fairly dry spell, usually help the seed to germinate quickly and well. Cold and soaking wet weather are the most impossible types for seed-sowing out of doors. If the weather is very dry, and the soil dry and dusty, with no prospect of rain soon, the difficulty may be got over by making the patch of ground to be used, as open and fine in texture (tilth) as possible, then watering well with soft, or aired water (water stood in an open receptacle outdoors for several hours) from a fine rose watering can, an hour or two before sowing the seeds.

Sow Thinly for Best Results.

If the garden is one of new, and probably rather lumpy soil, it may not be possible to get the soil into fine, friable condition suited to the finer and smaller seeds. When this is the case the wisest plan is to prepare soil specially, by mixing the garden soil with an equal bulk of good loam, a little leaf soil, and a little silver sand (all obtainable at the seed stores) to form a nice compost with which fill boxes, flower pots, or seed pans, to within an inch or so of their rims, for seed-sowing purposes. Always use plenty of drainage, whether in box, pot, or seed pan. Broken pot sherds form the best drainage. Place them at the bottom of the seed pan, with a little rough soil or some small stones as the first layer over them before filling in the compost for the seeds. Water the compost an hour or two before sowing the seeds.

When the seeds are being sown be sure to scatter them thinly, and well apart to avoid overcrowding of the seedlings. If the seed is very small mix it with a little dry silver sand. Actually, the best plan in the end, for all but the finest seeds such as those of Ageratum, which can only be sown thinly with the sand admixture, is to dot them; that is to say, to place them, singly, with the fingers, here and there, or in rows, upon the damp soil compost. Cover lightly with soil compost to the depth, roughly, of the size of the seeds, then press down flat with a square of dry glass.

Cover the top of the box, pan, or pot, with a sheet of glass to keep the moisture in the soil and thus help germination. Until the seeds appear it is also a good plan to place a sheet of cardboard, or thick, brown paper on top of the glass. Remove this as soon as seedlings appear or they will easily become drawn, and sickly. Should the soil become dry before the seedlings are seen, moisten it by immersing the seed pan in water. The surface of the soil should be just above, or level with, the surface of the water in the bowl in which the seed pan is placed.

This plan of seed-sowing answers well for most hardy, and half-hardy annuals. There are a very few (such as Shirley Poppies) of the latter that are difficult to grow well after the transplanting necessary for seedlings developed in pans, etc., and that must therefore be sown where they are to flower, and be thinned out if necessary to allow the strongest seedlings to mature into flowering plants; but the majority of these plants really benefit from being transplanted from their seed pans and boxes, to their flowering quarters if the operation is carefully done.

Sowing Seeds in Flowering Positions.

When the seeds are to be sown in the positions where they are to flower what has been said about the preparation of a fine compost (if the ground is naturally lumpy) for the surface must be attended to or the number of seeds developing into flowering plants may be very few indeed. Not only will they be few, because most of them have been too deeply covered with soil, or not covered at all, but those that do come up are likely to appear most irregularly, two or three closely huddled together, with no more for a wide space, and then a few, singly growing (as they should be) that soon outstrip the others, giving the final result of a badly-grown, irregularly flowering patch, or clump of the plants when mature.

With large seeds such as sweet peas, and nasturtiums, it is quite easy to guard against this because they can be, of course, most easily sown singly as desired. After a little practice it will be found that many seeds can be dealt with in this way, down to those of the size of stocks and wallflowers. Those who have small hands and tapered fingers will be able to sow even smaller seeds than these, singly, with care.

Most seeds of the sorts we are considering are quite cheap. It is not on the score of economy of pocket altogether that thin sowing is recommended, but for the more important reason that it is most necessary for the full growth, and quick flowering of the plant, and unless it is followed out in the majority of cases there will be a waste of time, and space, in the garden.

Sowing, and planting out from seed boxes or pans in irregular formation, enables one to avoid strictly formal design in planning borders and beds of annuals which can thus be grown in effective clumps of one variety, and one colour, the lower growing sorts near the fronts of the border, being seen to best advantage against the projecting bays of taller growing kinds placed farther back. Here and there along a border, or the edge of a large bed, the taller sorts can be brought forward to break up the formality of the low, more compact, sorts; unless, of course, it is preferred to design borders and beds along prim, geometrical lines.

If the design of a bed or border is to be formal and compact, plants of formal, compact growth must be chosen. The shrubby-growing Godetias, older-fashioned types of Asters, and Ten Week Stocks, and Ageratum, for instance, are well suited to formal design, whereas, the newer, tall growing Godetias, the many delightful Asters of the branching-flowered types, and Stocks of the Beauty of Nice class, simply refuse to remain within the limitations of a set pattern.

From the descriptions of quick-flowering Hardy and Half-hardy Annuals in the next chapter, it will be seen that there are many other species of plants besides those given now as examples, which contain varieties of both compact, and loose-growing types, suited respectively to formal garden design, and to the more modern idea of following Nature's plan in the hedgerows, fields, and woodlands, where most wild flowering plants are to be found, as a rule, growing in large patches, circular, or semi-circular in shape because of course (when they are annual species) they are seedlings that have sprung up from the seeds dropped, scattered (from seed capsules of the "explosive" sort, like vetches) or carried short distances by the wind (like milk thistles) and, in any case, planted by Nature with a graceful disregard for stiff, formal rows, and prim circles of the stiff armies of plants aimed at by gardeners to whom a garden is made up of patterns of colours, and shapes rather than the home of living plants, arranged to show off their living beauty of flower, leaf, and stem.

4.—Choosing Quick-growing Annuals.

One of the keenest enjoyments about a garden, even a garden devoted to quick-flowering annuals, or other quick-flowering plants to provide a display until the time necessary for the fulfilment of more elaborate schemes has elapsed, is the scope it affords for the expression of individuality. Since tastes differ widely in matters of detail, readers must choose for themselves from the accompanying descriptions those flowers that from height, time of flowering, and soil requirements will best fit into their garden plans.

In a broad sense, enough has been said already about types of gardens, and it only remains to be added, in a general way, that so far as colour is concerned with quick-flowering plants, it is not at all a bad idea to plan around some central interest, such as a " Blue " garden—flowers of various shades of blue; a " Patchwork " garden, in which the colours are violently contrasted (very vivid effect can be secured, naturally, in this way); or a garden in which the aim, in colour, is to blend various tints of different colours, working through, say, from palest cream to deepest orange; from palest pink, to maroon; and so forth.

For handiness in reference the descriptions are arranged alphabetically. H.A. signifies Hardy Annual; H.H.A. signifies Half-hardy Annual.

Acroclinium (Immortelle-flower). H.A. This everlasting is one of the quickest flowering of all annuals, producing its white and gold, or rose and gold, flowers in some six weeks from the time of sowing the seeds outdoors. Likes a fairly light soil, and grows a foot high.

Adonis æstivalis. H.A. The annual type of Adonis, or Pheasant's Eye, has crimson flowers, and feathery foliage, and is a foot in height. It is not particular as to soil, and soon flowers, although it succeeds best when sown in the early months of the year, towards the end of March.

Ageratum. H.H.A. Grows only six inches in height, and forms neat, compact little plants, the powder-blue, or white flowers being borne just above the light green foliage. The plants remind one of miniature Hydrangeas in habit. Ageratum can be flowered in a couple of months from sowing if raised under glass; otherwise in boxes of fine compost not before May, covering the boxes, or seed pans with glass. It is improved by transplanting, pricking out the seedlings to about three inches apart. If sown directly into the ground, outdoors, even if the weather is warm, results are almost certain to be poor as the seeds are light and small.

Alonsoa (Mask flower). H.H.A. This rather delicate annual grows a foot high, and bears pink, or scarlet flowers in sheltered situations in the South, in three to four months. A good leaf-soil compost is advisable, and unless the situation is very favourable, it is best to rely upon sowing under glass, in heat, in early spring, planting out in May; or, of course, purchasing from the nursery to plant out then.

Alyssum. H.A. There are now obtainable lilac and primrose coloured varieties in the annual type of this favourite edging and "carpeting" plant, as well as the white, so aptly known as Sweet Alyssum. Seeds sown outdoors any time from early spring to autumn or in a frame in winter, soon form compact, bushy plants that will freely flower in two or three months, and maintain a pretty uniform height of three to four inches. Most accommodating as to soil, but likes plenty of sunshine

Amaranthus (Love Lies Bleeding). H.H.A., with handsome coloured crimson, red and yellow flowers, and richly-coloured foliage. Height, eighteen inches to three feet. The flowers hang in graceful racemes, giving to the red types the popular name of Love Lies Bleeding. Best treated like Alonsoa, but may be depended upon to flower in three months from sowing, especially if raised under glass.

Arctotis. H.H.A. *A. grandis*, the easiest of these South African plants to flower outdoors, is of rather straggling habit and grows to a height of two feet, flowering about July from a May sowing outdoors, or earlier if raised under glass; frequently purchasable as plants at shops and nurseries. Foliage silvery, and dusted with a farina. Flower marguerite-like, glossy white, with mauve centres inside a golden circle. Best transplanted, whether sown indoors or out. Effective in massed effect for informal borders. Dry, sunny position, and light soils.

Arnebia Carnuto. H.A. A most interesting annual from Afghanistan, growing a foot high, and freely producing its yellow flowers in about three months from a spring sowing. The flowers have five black spots at first, but these fade in time. Any fairly good soil. Likes sunshine.

Asters. H.A. and H.H.A. The new Hardy Annual single asters may be sown outside from April onwards until midsummer, if the weather is mild, blooming from summer onwards. They should be thinned out, or transplanted to a foot apart. The more common H.H.A. types are generally raised under glass, and are the most commonly offered seedling plants for bedding stocked by shops and nurseries. They vary in height from six inches to two feet, and their flowers are single, semi-double, and double, and of practically all colours (saving black) and shades. They prefer a light, rich soil, but will flower from

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seed in about three months' time in most gardens; quicker if bought as plants. They will even bloom in shady places though undoubtedly thriving best with a good amount of sunshine. The dwarf Victoria types are compact little plants suited to formal bedding. The tall Chinese types, being freer in habit, are more suited to informal plans.

Balsam. H.H.A. These make fine subjects for the back positions in formal borders of annuals, their glossy, green foliage, with double camellia-like flowers up the stems, sometimes spotted or striped as well as self-coloured, making a brave show. They like a rich leaf-soil compost, and sunny position, and flower in three to four months from seeds. It is best to buy the seeds from reputable firms and grow under glass; or sow outdoors at the end of April. Seedling balsams procurable at shops are often of poorly-flowered, insignificant type.

Bartonia. H.A. The golden, poppy-like flowers of *B. aurea* which grows to a height of eighteen inches, and flowers freely in two to three months, on light soils and sunny positions, supply an unusual tint among annuals.

Brachycome. H.H.A. The Swan River Daisies grow six inches in height, and bear red, or blue, flowers, in about four months from sowing. Sow the seed in boxes of fine compost, putting glass on top to conserve moisture, then transplant out. A fairly rich, light soil, and sunny position help full development and intensity of colour.

Calendula (Marigold). H.A. are also known as Scots and Pot Marigolds. They will thrive practically anywhere though grateful for a good amount of sunshine and light, good soil. Height is one foot to eighteen inches, and the flowers are either single, or double, and all colours of yellow from palest lemon to deepest, fiery orange; also pure white. The contrast of the large, double orange flowers with the pale green foliage makes the new double varieties among the most popular of flowers for decoration. Under suitable conditions and away from shade the habit is branching, but sturdily upright, so that clumps of Calendula, allowing at least eight inches from plant to plant, fit into most garden schemes. By successive sowings will bloom practically all the year round, outdoors, in two to four months according to season. In sheltered, sunny positions will sometimes stand the winter and recommence flowering vigorously in early spring as the habit is not, strictly, annual in the new, improved double types.

Candytuft. H.A. Sown outdoors, thinly, where it is to bloom, from March until September, or even later in mild seasons, this compact, free-flowering annual will bloom in two to three months from sowing. The plants are six inches high, and the flowers are pure white, and various tints of pink, crimson, or mauve, and suitable for front positions, rock garden, or carpet bedding. Thrives practically everywhere.

Chrysanthemum. H.A. The annual varieties of Chrysanthemum vary in height from about six to thirty-six inches; most of them however, are erect, branching plants of about eighteen inches high. As a rule they are grown far too closely together. Allow at least eight inches from plant to plant. Rather apt to blow over with high winds so must be staked for formal garden schemes. Succeed practically anywhere, saving very stony ground, and complete shade. It is impossible to describe species, let alone varieties here, but flowers are either single, or double, white, or self-coloured in many varied hues; also, one type *C. tricolour* bears lovely single flowers in which three colours are seen in circles around the centre disc. All are quite hardy, flowering in about two to three months from time of sowing. May be sown from March to November, the latter seedlings standing a mild winter and flowering in early spring. The new Double Fringed varieties produce flowers that are not unlike the Perennial Border Chrysanthemums.

Clarkia. H.A. There are two distinct types, the tall, and finest flowering, which grow from two to two and a half feet; and the dwarf which are nine inches high. The tall produce elegant sprays of white, cream, mauve, pink, scarlet or apricot flowers, single, double, and semi-double varieties in about four months from March to May sowings. In sheltered positions will flower in early spring from September sowings. Clumps of the tall-growing, neatly staked, are effective for back positions in borders, or beds.

Collinsia. H.A. growing one foot high, and flowering freely in summer from spring sowings, in a light, and rather limy soil. There are self-coloured as well as two-coloured flowers in pinks, and in pink and white, and blue and white, varieties. Sow the seeds where they are to flower, and thin out to four inches apart.

Convolvulus. H.H.A. Though the tall-growing sorts will flower all right if raised in heat, or purchased from the shops or nurseries for use as climbers, the dwarf kinds, a foot high, are more truly annual in habit, and from late April sowings will form useful little plants for bedding, bearing pretty trumpet-shaped blue flowers, with white throats, throughout summer. Like sunshine, but are not particular as to soil.

Coreopsis. H.A. The annual varieties of this showy plant vary from six (dwarf) to eighteen or twenty-four inches in height. From March sowings will supply an abundance of single flowers all summer, in colours, various yellow and brown shades. The habit of the tall kinds is rather straggly, and they are unsuited to formal schemes. The Coreopsis is also known as the Calliopsis.

Cyanus or *Cornflower.* H.A. This pretty native plant which grows about two feet high, and may be sown from March to July or August to flower the same season, has been improved of late years, very double rose, mauve, white, carmine, maroon, and blue flowers being produced. Sow where it is to grow, and thin out to about six inches apart. In clumps it keeps upright, otherwise is liable to be blown over. Pretty in clumps of mixed colours, but most effective when the colours are kept distinct.

Delphinium. H.A. The annual types of Delphinium are generally termed Larkspurs, and grow about two feet high, bearing erect spikes of flowers, resembling Stocks in compact form. Unless staked, however, the plants are likely to become straggly in growth as the summer advances. Sow in spring for early summer flowering in sunny positions, and light, rich soil. Colours, various blues and pinks, as well as white. Feathery delicate green foliage increases attractiveness of the plant.

Dianthus. H.A. The annual Dianthus, generally termed Indian Pinks, grow twelve to fifteen inches high, and give a wealth of aromatically perfumed single and double flowers, mostly some shade between pink and maroon, or these shades and white, in three to four months from an early April sowing. They prefer rather limy, and rocky soils, and must have plenty of sun. Suited to either formal or informal gardening plans.

Dimorphotheca (Peacock's Eye Daisy). H.A. and H.H.A. The Transvaal or Namaqualand Daisies are quick flowering and brilliantly coloured subjects, varying in height from nine inches to two feet. The Hardy types will bloom early in June from an April sowing, and the H.H.A. in July from seeds sown in boxes of fine, leaf and silver sand compost, at the beginning of May, covering with glass at first to protect from frost, and transplanting out to about a foot apart. Flowering continues until cut down by frosts. The flowers are various delicate shades of yellow, orange, and salmon; also white. All have brilliantly coloured centre discs which give them the popular name of "Peacock's Eye" daisies. As the habit is rather straggling they are seen to best advantage in the semi-wild garden, especially if sub-tropical in foliage plants.

5.—More Quick-flowering Annuals.

Eschscholtzia. H.A. The type *E. californica,* also known as the Californian Poppy, orange yellow with feathery, grey foliage has been improved almost out of recognition so that practically all shades from palest yellow to fiery orange, and from palest pink to carmine, as well as white, in single and double flowers, are obtainable, retaining the hardy, quick-flowering habits—inside three months from seeds sown outdoors in sunny sites—of the original type. The height is about nine inches, and the Eschscholtzia will thrive on dry, stony soils, or light, sandy soils, if need be. The seed should not be sown before mid-April, but late autumn sowings will provide seedlings to stand the winter and flower quite early in spring in Southern localities.

Gaillardia. H.A. Even the annual Gaillardias which grow to a height of about sixteen inches under favourable conditions of sunshine, and a sandy loam for root run, make impressive border subjects, with their dark crimson, or yellowish flowers borne on stiff stems above the pointed, light green foliage. April is early enough to sow the seeds which may be expected to reach the flowering stage in July or August, continuing to bloom until late November. Gaillardias are, for some reason or other, among the seedling annuals one is pretty sure to find at the nursery shops. They are quite easy to raise from seed oneself if the seed is sown, thinly, in sandy soil. At every stage of growth they are very impatient of crowding.

Godetia. H.A. As with Clarkias, there are two distinctive types, the bushy, and the tall, both of which freely bear quantities of flowers throughout the summer if sown from mid-March, onwards, flowering in three to four (the longer period for the earliest sowings) months from seed sown outdoors. The bushy types are about a foot high, the tall from eighteen inches to two feet. The latter should be staked to show them to utmost advantage. Treated thus they are as suitable as the bushy types to formal gardening. Succeeds anywhere unless in total shade. May be sown where they are to bloom, or transplanted. Plants should be about six to eight inches apart each way for full development. The cone-shaped flowers have generally dark blotches of colour at the hearts, and are some shade of pink, red, mauve or lavender.

Gypsophila. H.A. Growing about twenty-four inches high the annual types bearing numerous tiny white, pink, or rosy flowers, single or double, at the tops of numerous thin, wiry stems, are general favourites for use in table decorations, or as foliage to mix with other cut flowers. Sow in April for flowering the greater part of summer. Not particular about soil or situation.

Heliophila linearifolia (Cape Stock). H.A. The Fairy of the Veldt, as this graceful and easily grown introduction from South Africa is popularly termed, should be sown in a fairly rich and light soil, about mid-April to flower from early summer onwards. Sow thinly, and see that the plants, which grow only to a height of nine inches, are a foot apart. The gossamer beauty of the delicate wedgwood blue flowers will then be enjoyed to the full. It revels in sunshine.

Helianthus. H.A. The annual varieties of the Sunflower vary in height between four feet and ten feet, and the flowers vary in size from a border chrysanthemum to a tea-plate, and are now to be seen in all yellow tints, as well as reddish-orange. As a rule the annual sorts bear single flowers. Sunflowers are gross feeders, and the ground should be well manured for them. They require sunny positions, and plenty of room. Unless there is plenty of space the gigantic sorts should not be planted as they easily dwarf border subjects of average height whether annual, or perennial. Sow sunflower seed singly, well apart, where they are to grow. They do not bear transplanting without suffering noticeable check.

Helichrysum (Everlasting Flower). H.A. These are the most familiar sorts of Everlastings, producing flowers of varied colours which are cut in summer when perfect and dried for winter decoration. They grow to a height of eighteen inches though there is a giant type that attains a foot more. They take fully four months to flower from seed, like a good soil, and sunny, sheltered positions. Sow in late April. They are not suited to any but the Southern counties for outdoor culture.

Jacobæa (Cultivated Groundsel). H.A. Lovely free flowering subjects, about eighteen inches high, and bearing double flowers, some shade of pink to crimson, in about three months from time of sowing. Sow from mid-March on during mild weather. The habit is compact, though branching, and the plants bloom continuously, flowering freely in most situations, though preferring a fairly good, light soil.

Kaulfussia (Cape Aster). H.A. A charming little annual only six inches high and thus suited to front positions, or edgings. The blue, or rich crimson flowers are freely produced in about four months from an early April sowing. Any good garden soil, and fair amount of sun.

Lasthenia. H.A. Another small, low-growing annual six inches high, suited to rock gardens; opening its yellow flowers about the beginning of June from a March sowing. It likes a rather light soil, and sunny position.

Lavatera (Mallow). H.A. These are the Tree Mallows, three to four feet high, and thus suited to the backs of borders, where they are effective when grown in clumps, the individual plants a good foot apart. They may be sown in March, and succeed practically anywhere, though flowering earlier (June) in sunny than in shady positions. The flowers are generally some shade of pink to carmine; also white. They are attractively satiny in texture.

Linum grandiflorum rubrum. H.A. Unlike the Blue Flax, and Yellow Flax, the Scarlet is an annual, quite hardy, and blooming readily in three to four months from an early April sowing. It succeeds well in any sunny situation, and should be thinly sown where it is to bloom. The flowers are an intense, deep scarlet.

Livingstone Daisy (*Mesembryanthemum criniflorum*). H.H.A. This beautiful little South African plant of recent introduction grows about three inches high and forms tufts of thick, fleshy foliage nine inches across, being covered with crystalline globules like the well-known Ice Plant. It may be raised under glass and transplanted, but succeeds well sown thinly on light, friable soil in a sunny position in May, thinning out and transplanting being attended to as soon as the seedlings are big enough to handle, should they come up too close together for each to have the nine inches or so space for the tufts of foliage to spread upon the ground. It is thus a plant especially suitable for edgings, carpet bedding and rock gardens. It flowers freely most of the summer, the flowers being various shades of pink, crimson, rose, apricot, and primrose yellow; also white.

Lupinus. H.A. The annual Lupins have improved from the old fashioned, skimpy-headed flower spikes of a few years ago, and make a brave show if one obtains the seeds, or plants from a reputable firm. The height is about two foot, and if the position is open and sunny the plants form bushy shapes and are suited to either formal or informal schemes; but in shady positions, where they will also flower, the growth becomes sappier, and less tidy. Colours are mainly blues, whites (creamy and yellowish) and apricots and pinks. They will succeed anywhere, and flower by June from a March sowing; or in about three months from later sowings until August.

Malope. H.A. The annual mallows will freely flower in summer from a sowing in the open ground in April and May. Sow thinly, and preferably in a fairly sunny place. The height is one to three feet, and the growth fairly upright, unless the position is on the shady side when they are apt to flop. In colour the flowers are violet, crimson, or pink; or white. Though not particular as to soil they prefer a heavy, rather than a very light compost.

Marigold. H.H.A. The only marigolds that need seriously occupy attention in a garden of annuals to bloom quickly, are the African, height eighteen to twenty-four inches; and the French, six to twelve inches. Both may be sown outdoors early in May to end of June, to flower freely in summer; but they give the longest display when raised indoors—a sunny window will do; or bought as young plants, and planted out early in May. They are readily obtainable at shops and nurseries. The African require a distance of quite a foot from plant to plant. The large, globular flowers are freely produced above the rather fern-like foliage. Colours, some shade of yellow, lemon to deep orange.

The French should be planted four to nine inches apart. Flowers are double, semi-double, or single, and various arrangements of yellow, and deep reddish-brown, some double flowers being beautifully striped with the two colours. Must have sunshine, but not particular as to soil, although the Africans grow to noblest proportions for backs of borders on a light soil liberally treated with well-rotted stable manure. Calendulas (which see) are sometimes called Scots Marigolds, and actually belong to the category of Pot Marigolds.

Matthiola Bicornis (Stock). H.A. Though the Night Scented Stock as this plant is generally called, is an inconspicuous little annual with greyish foliage, and single, straggly-looking lilac flowers, its lovely perfume, exuded most freely at night, makes it indispensible. It will flower freely in sun or shade, and is not particular as to soil, blooming during the summer or autumn in three months from the time of sowing. Sow thinly where it is to grow.

Mignonette. H.A. Another sweetly-smelling favourite, hardier than the last, since in favourable situations it will come up each spring from self-sown seeds in the autumn. The best varieties have large, pyramidal flowers that are in themselves beautiful if scarcely so sweetly scented as the older, more primitive types. Mignonette must have sunshine, and a rather limy soil which, however, has been enriched by the addition of rotted manure, and loam. Best sown where it will grow, from mid-March onwards, flowering in two to three months from time of sowing, according to the time of the year. Growing from six inches (the old sorts) to twenty-four inches for the modern, giant varieties, it is of rather straggling growth unless staked. The plants should be thinned out, or transplanted to about six inches apaprt.

Nasturtium. H.A. There are two distinct types, the climbing, six to ten feet high, and the dwarf, or Tom Thumb, forming compact, shrubby plants about six inches high and a still smaller Lilliput sort which can be kept down to three or four inches on poor soils. All these kinds flower most freely, and brilliantly on quite poor soils. Manure should never be given, or there will be an abundant rank leaf growth, and little flower. Must have a fair amount of sunshine, and does well in most garden soils. Colours, all shades of yellow, pink, and crimsons. There are, too, spotted and blotched varieties amongst the Tom Thumbs. The scarlet flowering sorts have dark leaves, the others, pale green. Flower in three months, and may be sown outdoors any time from April until July.

Nemesia. H.H.A. Four to fifteen inches in height. A most delightful group of South African plants of which there are now many improved varieties in cultivation. Must be raised in heat to get the full flowering time all summer. Fortunately, can be obtained as nursery plants to order, and often in shops. Plant the short, shrubby sorts about three inches apart; the tall-growing, about six inches, for full effect in broad borders, or large patches. The flower stems rise from tufts of leafage. Flowers are in a bewildering variety of shades, and colours—practically everything excepting black.

Pea, Sweet. H.A. One of the most universally popular of all garden subjects, this charming annual has now been developed under cultivation to an amazing extent, with flowers four or five times larger than the types of a few decades ago even, and bearing as many as four or five blooms per stem, instead of two or three. There are also waved, as well as plain-leaved flowers; and dwarf (some varieties of which freely bear threes and fours per stem) as well as the more familiar tall sorts growing from four to six or eight feet in height according to varieties and methods of cultivation.

The proper cultivation of this annual is a highly specialised subject and is dealt with in a special section.—See page 79.

Phlox Drummondii. H.H.A. Six to twelve inches. The seeds may be sown in boxes of fine compost indoors, in a sunny window, or frame or greenhouse, in March or April, and the seedlings bedded out about four inches apart early in May. They will flower profusely the most of the summer. Sown outdoors in May the plants may be in flower by July. Flowers are now produced in practically all colours, and shades, except black, usually with a dark centre, or "eye". Very commonly offered for sale in shops; but be sure they are of good, modern large-flowered varieties, as the old sorts are somewhat disappointing. Likes a sunny position, and a fairly rich, light soil. Habit, somewhat trailing, but not untidy, Makes an excellent bedding plant, and is useful too in the Alpine garden.

Poppy. H.A. There are, nowadays, many kinds of hardy annual poppies all of which flower freely practically the whole summer from seed sown outdoors in March and April; and in autumn from seeds sown until the end of June. The Shirley (semi-double) and Carnation (very double, balls of bloom, really) are the two, distinctive, and most free-flowering sorts for quick results. Sow very thinly, on newly-raked, fine sandy compost. Water in well, and scatter a mere sprinkling of silver sand, or fine compost over the seeds which are very small, but germinate freely if not buried deeply. If the seedlings come up at all thickly—the young plants should be at least three inches apart—thin out ruthlessly, or the flowers will be small, and the flowering period short. Seed pods must be removed daily to ensure a continuance of bloom right up to late summer, or into autumn from late sowings. Carnation types are sturdy, upright growing; Shirley types rather inclined to become straggly. Height, twelve to thirty inches. Poppies are easy subjects for the amateur, and the flowers are in many delicate art shades, and colours.

Stock. H.H.A. For some obscure reason these beautiful annuals are associated popularly with asters to which they have no botanical relationship. Probably because stocks and asters are generally offered for sale as seedlings in the spring by most shops, and stalls throughout the country. From sowings under glass, in heat, in early spring, and planted out as seedlings in April and May, the Ten Week sorts will be in full flower in July to September. Or they may be sown in the open from late April onwards to flower in about three months. The Beauty type flower rather more slowly, but over a longer period. The Brompton (tall) stocks sown in July and August and planted in sheltered positions will flower in winter, so that they, and the Intermediate types are most useful for gardens that have to be planned late in the summer to yield flowers, outdoors during, or near winter.

Stocks like a sandy loam, and should be allowed plenty of room. The habit is generally neat and compact, the height from nine inches to twenty-four inches (Beauty and Brompton types—the latter, strictly speaking, are biennial, but will flower as H.A. sown in summer) and the flower spikes are freely produced, of many charming colours, rose, scarlet, lavender, mauve, white, and yellows predominating.

Ursinia anethoides. H.A. Though a comparatively recent introduction from South Africa the Ursinia has been already developed in several cultivated forms. It is perfectly hardy, and if sown outdoors in April will freely bloom in June, and keep up the supply of deep orange, marguerite-like flowers, with a circlet of dark, glistening spots around the central disc which glisten in the sunlight like fragments of rubies. The flowers are borne on wiry stems a foot or so above the pretty green, fern-like foliage. The plants should stand, finally, about six inches apart, or the flowers are likely to prove undersized. It transplants well, and likes a good, light compost and plenty of sunshine. The best results in germination are got by sowing thinly in boxes of fine soil, with the protection of a cold frame, or even a sheet of glass, until the third leaf or so, then transplant into flowering quarters. Removal of seed heads helps to lengthen the flowering period but is not so imperative as with such subjects as sweet peas.

Virginian Stock. H.A. With Sweet Alyssum this pretty little flower is, probably, the quickest flowering of all annuals, sometimes coming into bloom in a couple of months from the time of sowing. It can be sown at almost any time from March to September with every prospect of flowering well in two to three months unless the situation is unusually bleak. Likes sunshine, but will flower in shady places too, and is not particular as to soil. Height, six inches. The sweetly-scented flowers are white and various shades of rose to lilac; also yellow. Scatter seed very thinly in patches for most pleasing effects.

6.—The Quickest-flowering Garden of All.

The quickest flowering garden of all is the garden that is planned and planted on the bedding-out system.

"Bedding-out" means, briefly, placing plants at, or near maturity, i.e. with flowering plants this means in full bud, or actually in bloom, out of pots, or boxes, or with the root-ball intact as bought at the nursery, or shop, in the position where the plant is to flower.

The system applies to practically any subject that will bear the weather conditions outdoors at the time of planting out, and as they may be expected to continue until it has ceased to flower. We have already referred to it briefly in regard to planting roses from pots at other than the proper season for putting these favourite shrubs into the ground as dormant roots, i.e. some time between November and the end of February.

First of all, the bed, or border, or part of these, where the bedding-out is to be done, must be well dug over, all lumps and large stones removed; and it will be advisable, probably, to incorporate some good loam with the soil during the digging process.

Whatever is done, the soil should be in a light and friable condition to receive the plants out of the pots, etc. To put nicely grown plants of any sort, in flowering condition, out of pots, in cold, lumpy, non-porous soil is simply to consign them to slow death by starvation. What the fine, feeding rootlets at the outside of the ball of earth from the pot, or box, need, is fine, friable soil into which they can easily penetrate.

It will be a great help towards ultimate free flowering if this soil contains some of the plant's favourite food, whatever that may be. This will be found in each case upon a reference to the descriptions of the plants, whether they come under the category of annuals, biennials, or perennials. Usually it is perennials that are bedded-out. But many half-hardy annuals are often used in this way, to save time in flowering.

Turning the Plants out of their Pots.

Plants in pots are a little more expensive as a rule than roots purchased loose from boxes; but if one agrees to take them from the shop or nursery just out of the pots, i.e. with the root ball quite intact and moulded to the shape of the pot the difference in price over loose roots from boxes, or the open ground will be very little indeed (as there is not the value of the pots to pay for) and the plants will be just as satisfactory as though knocked out of the pots as planted.

Nevertheless, if the plants are not bought locally, or within a short railway journey the wisest plan is to pay the little extra to have them in pots; or else to buy by the boxful, in the case of annuals, or half-hardy annuals. One is then certain of having them in perfectly fresh and sturdy condition to bed out. Should they, for some reason or other, show signs of drooping before they can be planted out, give a good watering from a fine rose watering can, with rain water, or aired water (water that has been standing in a large, open vessel outdoors for twenty-four hours before use) in an outhouse, some half a dozen hours or so before planting them in the borders.

With a trowel make a hole rather larger than the root ball. Take the flower pot in the left hand, and with the trowel in the right tap the pot lightly all round. Turn upside down, placing whole or part of the left hand across the top of the pot (which is now underneath, of course) to prevent the root falling out, and the plant being injured by a sudden drop.

If the root ball still remains firm in the pot, due to the plant being slightly pot-bound, or the soil too wet and held in by suction, tap the sides and bottom of the pot again with the trowel. Should it still refuse to come out easily push a short, strong piece of wood against the potsherd drainage through the drainage hole in the bottom of the pot, not forgetting to keep the left hand over the top of the pot all the time, and the root will, as a rule, come away readily.

Place the empty pot upon the ground, the plant, upside down, being still in the left hand. Then place the right hand over the root ball to keep roots and soil all intact as the plant is carefully turned upright, and placed into the hole already made for it. Fill in the loose soil completely all around the root ball. Press down all firmly. Fill in a little light soil over, and around the root, close to the stem. The plant may then be regarded as well and truly planted.

If the weather at planting time is dry and hot, it will be advisable to water the plants from the fine rose of a watering can or hose, every evening to prevent the slightest possibility of flagging. But if it is at all possible to arrange to do this bedding-out during a spell of showery weather, conditions will be far better. The rain is certain to induce a good start, and is far and away before any amount of watering by hand. Hand-watering, however, just after planting serves a useful purpose in settling the soil compost in firmly around the root ball, and softening the latter so that the fine rootlets make a quick and easy contact with their new sources of food supply.

When the plants are not bedded-out from pots, but from boxes, their transplanting becomes a rather more difficult matter. Especially is this the case when, as so often happens, a few roots of each sort are bought at a shop, and there is some lapse of time between the lifting of the plants out of the box by the shopkeeper or nurseryman, and their replanting in the garden by the purchaser.

Bedding-out Plants from Boxes.

When the plants are moved directly from box or seed pan to their sites in the garden the root ball will be disturbed, but if care is taken, and the fingers placed firmly around the root to keep as much soil as possible around it when lifting from the box, there need not be any serious check to the continuance of growth.

Place in the hole prepared as for plants from pots, fill in around the roots friable compost, pressing it well in with the hands, then fill in some more loose soil to make level, and, if the weather is dry, water-in each plant well with soft water from the rose of a watering can. If some time elapses between the removal of the plants from the box, and their planting in the garden observe as far as possible the same care in leaving the root ball undisturbed, and fill in fine soil around it carefully when planting it.

Should the root ball have been broken, and the rootlets are all exposed, and perhaps dry (a condition that makes the successful bedding-out of perennials in flower, or bud, a difficult and unpromising affair), it may be advisable to place the roots in a shallow pan of rain water overnight. When planting them, mix some silver sand, and a little powdery manure, or guano (only a little, remember) with the light, loose soil to fill in around the roots, and keep well watered until thoroughly established. Despite all precautions, however, plants with root balls badly disturbed are certain to suffer a severe check to their growth.

Bedding-out Bulbs.

Bulbs in bud or flower, especially spring-flowering species, such as the more popular sorts of Narcissi, Crocus, Tulips, and the commoner Liliums, like Candidum, Regale, and Tigrinum, are usually offered by shops and nurseries, and have a use in bedding-out plans in the garden where an immediate display of bloom is wanted. So attractive are bulbs, whether grown in garden or bowl, that a separate section is devoted to these.—See page 86.

Arranging Bedding Plants.

Although the gardener will naturally bed out the plants according to his own ideas of a general garden scheme, or on the lines suggested for the formation of gardens of annuals, or perennials elsewhere in this book, there are some points about making a garden or border simply by bedding out the plants to which it will be well to direct special attention.

To begin with, one should consider whether the plants to be bedded-out are to be allowed to remain in position after flowering is over. If this is to be done, due allowance must be made in calculating the space from plant to plant, for the extra room likely to be needed when new growth is made at the end of the flowering time.

The height of a plant when in flower is rarely much of a guide to the space the root growth will require in six months or more, that is to say, by the season of the next flowering, supposing the plant to belong to the large class of perennials having a flowering time of two or three months.

There are tall plants, such as Hollyhocks, and Delphiniums which, considering their height, occupy very little more root space in the second season of flowering than when bedded-out as young plants showing flower buds. On the other hand some of the lowest-growing Alpines, such as Spergula Moss, and Arenaria, quickly cover ground space, and continue to do so indefinitely though their height may be under an inch; other tall sorts, like Lupines (perennial) and Michaelmas Daisies, within a twelve-month, easily double and treble the ground area they filled when bedded-out.

There are hundreds of such vagaries in growth so far as the height of plants is when purchased ready to bed out; and, as mentioned, if they are to be left in position, thought must be given to their final growth (or at any rate, for a couple of seasons in advance) and the amount of room given them to begin with.

In conjunction with this one should remember that most perennials (at least, those of the herbaceous types) can be dug up, and their root growth reduced within convenient limits, at the season when they are not in flower, without injury to satisfactory flowering next season; indeed, root division, carefully carried out at the right time (the non-flowering season —usually, late autumn, or early spring) improves the size and colour of flowers.

Apart from the information sometimes given by growers about the height and root space of plants, the safest general guide as to the room they are likely to need after their first flowering season, is to be found in the character of the foliage, rather than in the height of the flower stem. If the foliage is arranged cushion-like, with crowns of leaves on shortish stems growing closely together from the root ball, one is pretty safe in giving to that plant a ground space of about three times the extent of the crown of leaves when first planted if its further development is to be allowed for.

Successive Bedding-out.

However, when the sole object of planning a new garden on the bedding-out system is to have immediately a show of plants in full flower, and there is no thought of developments of the same plants and schemes in the following, or subsequent seasons, a display can be managed by successive bedding-out, until late autumn frosts threaten destruction to all but the hardiest subjects.

This simply means that as each group, or bed of plants flowering at the same time, definitely declines in appearance, and supplies of new buds (to stimulate which of course seed pods should be regularly snipped off) no longer appear, the roots are taken up and discarded, or re-planted in some part of the garden not needed for decorative purposes, their place being taken by bedding-out fresh plants of later-flowering sorts about to come into bloom that will keep up the display for another couple of months or so, Narcissi and Wallflowers, for instance, being followed by May flowering Tulips and Calendulas, and these again by Stocks and Asters, Begonias, Michaelmas Daisies, and Chrysanthemums—to give as examples familiar and popular bedding-out plants that may be used in this system of maintaining a garden all the season by successive bedding-out.

7.—Choosing Bedding-out Plants.

There is no need to discuss here the choice of annual plants for bedding-out purposes as they are described, and their times of flowering given elsewhere in this book. In this connection it is only necessary to insist upon the importance of taking the utmost possible care to prevent injury to the delicate rootlets of annuals used for bedding-out plants, and to make sure that the roots are kept moist, but not wet, until they have begun to grow in their new quarters. Practically all annuals are far more likely to suffer check from bedding-out, if these points are not attended to, than the relatively hardier perennials, whether they are bulbs, or fibrous rooted, like pansies, violas, and geraniums.

Most hardy perennials as well as most hardy annuals, and biennials, can be used for bedding-out purposes. But usually the plants in the category of bedding-out subjects are the smaller hardy perennials, or are half-hardy annuals, or greenhouse annuals, or perennials. It will be easy to make a choice of hardy, and half-hardy perennials for bedding-out on a reference to the chapter dealing with them, as in the case of the hardy and half-hardy annuals to be employed in this way.

We will now consider, alphabetically,

Typical Bedding-out Plants.

Abutilon. Though a Greenhouse Shrub the Abutilon is largely used in gardens in the Southern counties as "dot" plants in large formal beds. That is to say, a few Abutilons (or similar tallish plants) are planted well apart, at regular intervals, to "dot" and make more evident, the formal regularity of a large bed, say, of dwarf Antirrhinums, geraniums, or violas. The Abutilons are from two to six feet in height. They prefer a light loam to grow in and are propagated from cuttings, or seeds sown in heat. Flowering time is summer, but the large vine-shaped leaves are very ornamental. One of the most useful is *A. vitifolium.* They are bedded-out from pots, and the root-ball must be kept undisturbed.

Acacia. These are the Mimosas which are Greenhouse Shrubs, but *A. dealbata* (the familiar Mimosa of the florists') and some of the Rosy-flowered species are used for bedding-out, as dot plants, or for the backs of borders, or archways (the tall-growing sorts may reach a height of ten to sixteen feet) and like a light, rich loam. They flower in summer, and are planted out from pots. Even if they do not flower freely, on account of a chilly season, the graceful, feathery foliage, of distinctive, grey-green colour, shows well in most gardening schemes.

Anthemis (Chamomile). This Hardy Perennial may be bought at times in flower, or about to flower, as sturdy plants in pots for bedding-out. The bright green foliage is feathery and graceful, and the marguerite-like flowers, which are white, or some shade of yellow—the finest variety is *A. Kelwayi*, with unusually large, deep sulphur flowers—are freely produced with but little attention in the way of removing seed heads, from June until November. The perennial Anthemis (there is a H.A. variety) are about two feet high, fairly compact in growth, but require staking for formal schemes. They like sunny positions, but are not very particular as to soil or situation.

Antirrhinums. The Antirrhinums, or Snapdragons, which are Hardy Perennials and Hardy Biennials in habit, are now produced in almost endless variety of colours, and types from the Dwarf Bedding (six to nine inches) to the Intermediate (eighteen to twenty inches) and the Tall (thirty to thirty-six inches) in height. Quite distinctive, named sorts to be depended upon for colour schemes, can be obtained from most good nurserymen for bedding-out in spring. If the seed pods are regularly removed, as each spike of bloom goes out of flower, new flowering spikes will continue to be thrown up throughout the summer right into the autumn. Bedded-out in autumn in sheltered positions, young plants then in bud will begin to flower and continue right into the winter months if the weather is mild. For all manner of bedding, and border schemes there are few more useful bedding-out plants than this. The habit of the Dwarf and Intermediate types is compact; but the Tall sorts generally need to be staked, although informal bedding plans their tendency to flop about a little if left to themselves rather adds to the charm of their natural growth. Though the Antirrhinum likes a sunny position, and a rather dry, light soil, it will flower well in semi-shade, and even bloom passably well in heavy soils. It will also grow well on old walls, and between the crevices of crazy paving, both of which sites are really very natural ones for the dwarf types.

A large bed, or long border, of Antirrhinums alone can be most effective if the intermediate sorts are used as dot plants to the compact regularity of the dwarf types; or the Tall ones are employed in that way against the shorter growth of a bed of Intermediates. Light, bright colours mixed with dark colours prove most effective, and cheering to the eyes, for the colours are never crude, or garish. In the newest varieties soft, art tints predominate.

Aquilegia. The Columbines most suited to bedding-out purposes are the newest, long-spurred flowering sorts which are to be had in all manner of lovely, soft tints of various blues, yellows, and apricot colours, producing their flowers on long, wiry stems above the elegant, maidenhair fern-like greyish-green foliage all summer, doing well either in sunny, or shady positions. They are not exacting either, as to soil. Excellent as dot plants—about three feet high—or for backs of borders, or centres of beds. They should be allocated permanent sites as, when once established, they are impatient of removal unless in late autumn, and spring. For bedding-out obtain seedlings in bud, and be most careful to leave root ball undisturbed. Water in well, and keep moist until growth has begun again, which will be denoted by the fresh green tips to leaves and flower buds.

Aster. The perennial asters are generally termed Michaelmas Daisies. They can be used in bedding-out schemes by experienced gardeners but are best managed by the beginner as herbaceous border subjects and are therefore dealt with in the chapter relating to perennials for ordinary gardening schemes.

Begonia. Though the tuberous-rooted Begonias are Greenhouse perennials, strictly speaking, they will freely bloom out of doors in summer in all save Northern counties, and are amongst the most handsome of typical bedding-out plants. Most nurserymen stock them in bud, from late April until July for bedding-out. Keep the root ball intact, as with all bulbous subjects. A light, loamy compost with silver sand, and a little leaf soil is necessary. Pockets of this must be prepared for the roots if the natural soil of the garden is very sandy, or very clayey. A little shade is not harmful, but they require sunshine for the best part of the day to expand the lovely, waxy flowers to fullest extent. A little weak liquid manure watered in is helpful in this direction.

The large flowers are single, semi-single and double (camellia-like) and most shades of red from pink to carmine, clear yellow, or white. The Fibrous-rooted Begonias are much hardier, but have only bunches of smallish flowers, mostly pink, red or white, above the shiny, dark green leaves. They are likewise suitable for bedding, and continue in flower practically all summer. They require similar soil and treatment. Both sorts form compact plants, the tuberous-rooted about twelve inches high, the fibrous-rooted about nine inches.

Canna. These half-hardy perennials are obtainable for bedding-out from late April onwards to July, as a rule. There are now varieties which flower from early summer until early autumn. Cannas are used almost as much for their beautiful foliage, as for their flowers which, unless in one or two of the newest kinds (which produce flowers as conspicuous as the large-flowering sorts of gladiolus) are smallish, though brightly coloured. The foliage may be either an intense light green, yellow and green, green and crimson, or deep crimson. The flowers are generally yellow, orange, scarlet, or crimson. Cannas make effective dot plants in large beds, or massed in borders, especially those near shrubberies. Sunny positions, and good, rich loam. Height, one to two feet. May be given permanent positions as, when the flowers are over, the foliage is attractive until cut down by frosts.

Carnation. The Tree, or Perpetual Flowering Carnations, which grow to a height of two feet, are best suited to bedding, and may be obtained in bud for that purpose from spring to summer from most nurserymen. They look best in masses, in strictly formal bedding schemes as they must be staked to light, split bamboo stakes, if the lovely flowers are to be seen properly. They are worth the trouble, as they will continue to flower all the season if the seed pods are at once removed. The grey, spiky foliage is attractive, and a fine contrast for the richly coloured flowers in all red shades (from palest pink), yellows, and even mauve. They prefer a rather dry, limy soil, and must have an open situation, and sunshine. Beds or borders of mixed colours are as effective as those of all one colour. See the Special Section dealing with Carnations, on page 71.

Cineraria. This Greenhouse perennial is among the typical bedding plants sold by all classes of nurserymen, from costers' barrows upwards! The flowers of the usual type have flat petals, those of the cactus type are folded, or rolled, like the petals of cactus dahlias. Both sorts are suitable for bedding, but they should be kept distinct although the colours may be mixed. Colours of cinerarias are rather cold, and aniline dye-like, however, and as they include cerise, yellow, and ultramarine ("Royal" blue) it is wisest to bed in distinct colours to avoid clashing. Any ordinary light soil, with sunshine, suits cinerarias, which can be depended upon to flower all summer, giving place to autumn flowering bedders.

Coleus. Another Greenhouse perennial much used for bedding. The foliage is the main attraction of the Coleus which are generally about two feet high when full grown. The habit is compact, and upright, and their main use is in masses, or as dot plants, occupying permanent places until cut down by frost, or removed indoors to the greenhouse. The broad, heart-shaped leaves are fantastically marbled in red, crimson, and yellow hues. They require a compost of turf, leaf-mould, loam, and silver sand, and will grow well either in sunshine, or semi-shade.

Daisy. For spring bedding-out this hardy perennial is decidedly valuable, as it flowers with little check though bedded-out when flowers are opening, and will do well in most sunny positions, making gay edges of beds and borders from early April into May at a season when bedding-out plants are generally scarce, unless bulbs are used. The newest sorts have double scarlet, pink, or white flowers that equal small, quilled annual asters in form and size. Compact habit of growth, about six inches high.

Eucalyptus. The Blue Gum trees are Greenhouse shrubs (only in high conservatories can they be allowed to attain to anything like full growth), but as young plants make admirable bedding subjects, and give bedding schemes of richly-coloured flowers—such as Gloxinias, Begonias, and Pelargoniums—a tropical appearance used as dot plants. The graceful, waving foliage and slender stems are of the art tint known as powder blue. The Scarlet-flowered gum produces its flowers on quite young plants. Requires a rich leaf mould and silver sand compost, and a sheltered, sunny position.

Gladiolus. The autumn-flowering sorts are often used for bedding-out. See chapter on perennials for ordinary gardening.

Gloxinia. Though these lovely plants are Stove perennials they may be used in bedding for summer and autumn flowering. As they can be brought into bloom at practically any season in heat, plants in pots, set with buds or in flower, are obtainable from the larger nurserymen all summer. Give a rich fibrous loam, peat, and silver sand compost, and be most careful to leave the root ball undisturbed. Once the plants are in flower do not give manure water. In the early budding state it is helpful if well watered in afterwards. Gloxinias are about a foot high, of compact growth, the handsome, large flowers, of many brilliant colours, and sometimes marbled in different shades, growing singly, on thin stems from the rosettes of large, handsomely-veined green leaves. Unless the position is warm and sunny, do not attempt this plant for outdoor bedding.

Heliotrope. This handsome, half-hardy perennial is deservedly popular for bedding-out as it flowers freely all summer, and will often continue its supplies of lilac, sweetly-scented flower trusses well into autumn in sunny situations. Give the preference to the newest, giant-flowered varieties which provide flower trusses three to four times as large as the old-fashioned "Cherry Pie." Height, about two feet; habit, compact, but sometimes requires staking. As a dot plant the heliotropes are most effective when grown as standards. Specimen plants of this type may be obtained from the better class nurserymen, but are somewhat expensive. Soil, rich, fibrous loam.

Lilium. Three at least of the Liliums make fine bedding plants for the centres of beds, or massed in borders. For this purpose they are obtainable from April onwards to July in pots, with flower stems set with buds. Like all bulbous subjects they must be most carefully turned out of the pots, the hole prepared for the root having a loose compost of peat, leaf soil, and silver sand, and never anything limy, or animal manure. Actually, as their flowering period is short, the usual plan is simply to sink the pots just underneath the soil surface, and conceal the rims with loose soil. There is then, of course, not the slightest check to flowering. *L. Regale*, *L. Longiflorum* (the Easter Lily), *L. Speciosum rubrum*, and *L. Harrissi* are the most suitable sorts for bedding-out.

Lobelia. The half-hardy perennial sorts of Lobelia are most useful bedders, the dwarf sorts, about four inches high, and making compact little plants that keep shapely all summer, being much valued for carpet-bedding and edgings. The foliage

is dark green or purplish-green; the flowers some shade of blue, or white. They flower freely from May to October in light soils, and sunny positions. The tall Lobelias of the *L. fulgens* type grow to a height of two feet, and have mulberry coloured foliage and flowers some shade of red. Flowering freely like the dwarf types their habit of growth fits them for borders and the centres of beds of low-growing plants.

Pansy. With this favourite bedding plant may be classed, for all practical purposes, the violas which are even more to be depended upon for a continuance of blooms throughout the summer. There are, too, winter flowering strains of pansy that make this plant an all the year round bloomer in all but the most exposed situations.

Pansies and violas in bud and flower suffer very little check from being bedded-out, and may be used massed, in beds of the one colour, or various colours; in borders, as carpeting for rose beds, etc. and, indeed, almost anywhere in the garden, if appropriate types and colours are chosen. Do not plant pansies that are drooping. Place such "tired" roots in a shady place, in a bucket of soft water, to become thoroughly stiff and sturdy, before bedding them out; then water in well; and always water pansies freely with soft water from a fine rose whenever there is the least suspicion of drought, or the flowers will rapidly fail in colour and size. Snipping off seed pods ensures a continuance of flowering as well as moist, but not wet soil. Pansies and violas are procurable in all colours save green, and in almost endless variety of markings. Height about six inches, growth rather straggly. Do well in most soils, but prefer cool, damp, but not too shady situations.

Pelargonium. For bedding-out purposes Pelargoniums and Geraniums may be regarded as one. They are greenhouse perennials and under glass flower practically all the year round. As bedders they are readily obtainable, and will flower out of doors freely from early May until the frosts of autumn if seeding heads are carefully removed.

There are double, as well as single flowered sorts, and variegated, dark leaved, ivy-leaved, and other handsomely-foliaged varieties. As a rule, however, the best sorts, bearing fine trusses of bloom, have quite ordinary green foliage. For bedding purposes give the preference to stocky, bushy plants about eight inches to a foot high, and well set with flower heads in bud. Knock out of pots carefully, and plant firmly in loose soil in the positions they are to occupy for the season. Boxes of small, unnamed, rooted cuttings are often most disappointing. Pelargoniums will thrive in most light soils if the position is sunny. They will not do well in heavy, clay soils that set hard in dry weather; nor in wet, boggy land. Massed in beds or borders, all of one variety and colour, they are seen at their best.

Salvia. The two Salvias principally in use as bedders are the blue, *S. Patens*, which is some two feet high, and scarlet, *S. splendens*, fifteen inches in height. Both are generally obtainable from nurserymen with good greenhouse accommodation as they require heat to bring them into bud. They are half-hardy perennials, of compact growth. Be careful not to disturb the root ball when taking them out of the pots, and prepare a good loam compost, with the addition of leaf mould, or well-rotted stable manure to fill in the hole made for the roots. They flower freely from June to September if seed heads are removed. The colours are unusually intense, and the foliage pale green, and attractive.

Wallflower. Wallflowers are so much used for bedding-out purposes that we include them here instead of in the chapter about gardens of quickly-flowering perennial plants, though they may very well be used there in plans of a more permanent kind than bedding with plants set with flower buds, or in bloom. Both single and double wallflowers bear transplanting well, whether purchased growing in pots, or (as is generally the case) loose, by the dozen, from nurseries, or in boxes. Make holes for the roots rather larger, and an inch or so below the top of the root ball. Fill in with any fairly light, fibrous soil compost. But wallflowers will bloom reasonably well in practically any soil if the position gets a fair amount of sun. They will also flower in dry, limy soils, and on rock gardens.

Always water well until growth is established, and the long, pointed leaves stand well out, stiffly, from the stems. If the leaves are at all limp when received, place the roots in a bucket of soft water, in a shady place, to revive before planting. Wallflowers planted with drooping foliage, or insufficiently watered until properly started off into growth, invariably lose the leaves from the lower parts of the plant, and soon present a scraggy, unsightly appearance even although they may come into flower alright.

The habit of this plant is naturally compact, and the height varies from about six inches to rather over a foot. Old plants become branching, and somewhat unsightly, a defect that need not trouble us for bedding-out purposes, as the plants are always replaced by other kinds as soon as they go out of flower. They are practically the earliest of bedding-out plants with fibrous root and are obtainable for this purpose from late February to April, coming into bloom within a month of planting. The colours are generally some shade of yellow, crimson, or brown; or white, in both single flowered and double flowered types. For bedding the best effects are obtained by planting all one colour, and height in bed or border. Wallflowers are also effective, when reliable dwarf types are used, as carpeting (i.e. covering over the soil between taller-growing plants) plants for beds of tall, May-flowering tulips; or the more choice, tall-growing narcissi.

8.—Quick Results from Herbaceous Perennials.

Frequently the tenancy of a new house is entered into in the third month of the year. When this is the case it is possible to include many hardy and half-hardy perennials in the gardening schemes with every prospect of securing flowers in this way from April until autumn frosts make impossible the production of blooms on all but certain hardy, winter-flowering plants, and a few shrubs. Generally speaking, herbaceous perennials of the hardy section—that is to say, those that do not need the protection of a frame or greenhouse in winter—must be placed in the positions in which they are to flower by the end of April at latest, unless they are amongst those (see Chapter on "The Quickest-flowering Garden of All") regularly offered by nurserymen for bedding-out purposes, in boxes or pots, so that they can be planted without serious injury to the delicate rootlets at the end of the roots by means of which the majority of plants gain their food from the soil.

Those who enter into the occupancy of a new garden in the late autumn and winter will likewise find hardy herbaceous subjects most useful in planning borders and beds. Open weather in winter really makes the best time to put these plants into their new quarters, but of course, those that are planted during February and March, provided the weather is suitable, will flower in their season as quickly as those that are inserted from the October tenancy term onwards.

Management of Hardy Perennials.

Hardy perennials possess the advantage of flowering for a couple of seasons without further attention beyond keeping the soil loosely forked and free from weeds around their roots, and watering them should the weather prove to be unusually dry and hot. While planning, therefore, for the immediate future, i.e. for flowers within from one to three months in the case of planting not later than the end of April—the use of this class of plants is likely to affect the appearance of the garden for years. In fact, the initial expense need be the only one if one does not mind seeing the same old flower faces year after year!

A generous allowance of space for growth must thus be made when planting these subjects, for the majority of them increase in the size of the root clump year by year, sometimes growing to five or six times the original bulk within a twelvemonth. The roots ought to be dug up then, in winter, and shaken apart, pieces of root from the outsides of the clump (which are the newest and youngest shoots, those at the middle being the old, exhausted ones) being replanted for next season's flowering. In this way, size of flowers and depth of colour can be maintained. Applications of rotted manure, either animal or vegetable, forked in around the roots occasionally, especially during rainy weather, help also in this direction.

There is no reason at all to restrict oneself to a garden of perennials, hardy or half-hardy; or of annuals, typical bedding-out plants, or any other one type of plant. Often the most continuous and quick-flowering results from a newly-made garden are to be got by a judicious combination of these different classes of plants, though it is quite possible to have a garden of quickly-flowering perennials if, as already emphasised, planting takes place not later than the end of April (from mid-February to the end of March usually provides the best weather conditions) and a choice is made from those now described. They are chosen for their quick-flowering possibilities and attractions as noted. The list is by no means a comprehensive one for perennials as a whole. There are many hundreds of others.

Achillea. The Sneezewort, Milfoil or Yarrow, produces during summer plentiful sprays of white or yellow flowers, and will thrive anywhere, unless in perpetual shade. There are dwarf sorts six inches high, and a giant yellow variety, *A. filipendulina*, attaining a height of four feet with other, older varieties, two feet high.

Agrostemma. The perennial Agrostemma, or Flower of Jove, produces its rich crimson flowers in sunshine or partial shade during June and July on handsome silvery foliaged plants of compact growth about eighteen inches high. There is also a white flowered variety. Does best on rather heavy soils.

Alyssum. We have warmly recommended the annual alyssums as among the most useful of their class, and the perennial sorts, varieties of *A. saxatile*, growing to a height of nine inches, and developing steadily into large patches of greyish foliage from which sprays of orange, or pale yellow flowers are freely borne in April and May, are similarly useful in the perennial class. They must have sunshine, and like a loose, friable soil. Once established and expanding in growth, they should not be disturbed, merely keeping loose the soil around the root clump. They will not make any progress on clay soil that sets hard in dry weather. *A. saxatile* will freely flower in spring and early summer within a month from planting. It is a splendid subject for Alpine gardens, or the fronts of beds, or borders.

Anchusa. The native species, fifteen inches high, is known as Bugloss. It is distinctly inferior to *A. Italica*, growing to a height of three feet with spikes of Cambridge blue flowers; *A. barrelierii*, also three feet high, with intense blue flowers; or *A. capensis*, the Cape Anchusa, with pale blue flowers. These finer varieties are impatient of shade, and like a fairly loose, rich soil. Unlike many tall perennials they do not expand in root growth quickly, nor do they become straggly when the tall flower stems shoot up, from late May to July, according to the weather.

Anemone. There are many species and varieties of the Windflowers, by means of which the flowering period extends from early spring (*A. coronaria*), the ordinary brightly coloured anemones so popular in the florists' windows in spring, to autumn, when *A. Japonica*, the Japanese anemone, with flower stems about two feet high, and flowers pure white, or rosy pink, is in season. These, and the St. Brigid anemones, and the dazzling scarlet *A. fulgens* are the only sorts with which we need be concerned in a garden of quickly-flowering perennials. With the exception of *A. Japonica* they are grown from tubers planted about February to March in semi-shaded or sunny positions, and in a light soil. They dislike heavy clays or limy soils. Height is usually about six inches, unless the Japanese, as stated.

Asters. The perennial asters are generally spoken of as Michaelmas Daisies, and while it is true that the old-fashioned,

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commoner sorts are scarcely worth the trouble of planting, for the comparatively insignificant flower spikes produced for a short time only at Michaelmas, the genus now embraces, for garden purposes, many superb varieties which maintain a display of bloom from June to October, one variety coming into flower as another goes off, and bearing flower spikes of fine, pyramidal shape, and single and double flowers. The individual flowers vary in size from a sweet pea seed to about a florin, and of a variety of colours and shades from white to deep carmine (through pink shades) to deep mauve (through mauve-blue shades); and to clear, sky-blue, but always with yellow centres to the flowers, whether these are plainly seen, as in the single-flowered sorts, or hidden, as in the double.

They will grow well in any soil, and respond to liberal manuring, especially with leaf mould. They should not be planted after March; the earlier the better, while the leaves, and embryo flower stems are part of the short, solid root cushion. The root clump expands quickly. Size of flowers is improved by only permitting three to six flower stems to bear flowers. Pinch off the others when about full height. For display they are improved by staking out the flower stems separately. For supplies of cut flowers from summer until late autumn (they will sometimes flower into November) the newer varieties simply cannot be dispensed with in any garden.

Calceolaria. The shrubby calceolarias are the kind most generally used in outdoor gardening, but even they need the protection of a frame during the winter months, and can only be regarded as half-hardy perennials. Owing to this fact they are sometimes offered by nurserymen in pots as bedding plants set with buds, in which state they bear transplanting very well, if watered in, and carefully attended to until growth is re-established. The habit is compact, and they increase but slowly in size. Height, nine inches. The flowers are globular in shape, about the size of green peas. They are borne in bunches and, in the shrubby sorts, are either yellow or brown.

Campanula. The Campanulas, or Bell Flowers, varying from three to six inches, for the Alpine varieties, to three or four feet for the stately border kinds, make charming subjects for the herbaceous border, and are among those perennials that can be planted with safety right up to the end of April, if watering is carefully attended to until they have rooted afresh. Canterbury Bells, which are hardy biennials, are also campanulas, botanically, and like the tall perennial sorts will flower in May and June, though there are varieties of the latter that will continue the display until September. They will thrive in semi-shade, though flowering earliest in sunny positions. A rather light, and even limy soil suits the Campanulas best. The root cushion does not expand very quickly, and an allowance of a foot across of space will be enough for the development for a couple of seasons. These tall sorts bear the flowers on upright stems that do not need to be staked. The flowers are various shades of blue (including mauve) or white.

Centranthus. The Valerians are accommodating hardy perennials of shrubby growth, two feet high, among the few plants that may be transplanted successfully at practically any season of the year. The foliage is an attractive grey shade, and the red, pale pink, or white flowers will be borne throughout summer if the seed heads are at once removed. Indeed, unless this is done the plant becomes a pest by self-sowing. It likes a light, limy soil and sunshine.

Cheiranthus. The Siberian Wallflower is really a biennial, growing one foot high and freely producing its richly coloured trusses of orange flowers in May to July if planted not later than mid-April. Flowers quickest in sunny positions, on rather sandy, light soils; but will flourish almost anywhere.

Chrysanthemums. The perennial types of chrysanthemum we are concerned with here are, of course, the hardy border kinds which are obtainable to-day in an immense number of varieties, to flower from late July until November. Some of the late flowering kinds are so hardy that they will withstand a moderate amount of frost in sheltered, sunny positions outdoors. As cut flowers then, in a cool room free from gas heat or lighting, they will keep in good condition for decorative use until Christmas. The height of border chrysanthemums varies from sixteen inches to a couple of feet. Being obtainable in pots at almost any stall or shop, they can be planted out right up to the end of May, if the root ball is undisturbed.

Make a pocket for them of rather light, rich compost, containing leaf mould and a little silver sand. Well rotted animal manure may also be mixed with it; but animal manure that is not rotted encourages rank leaf growth, and spoils the supply of well-shaped flowers. If size, rather than quantity of blooms is wanted, remove all but the centre bud of each shoot. Border chrysanthemums increase rapidly, and must be taken up, and divided into small roots, with two or three strong shoots after flowering is over, or the flowers the following season will be poor in size and colour. Chrysanthemums are produced bearing flowers in all colours and art tints, excepting blue and black, but including green. They are single-flowered and double-flowered types, the latter being divided into those with small, close-set "pom-pom" flowers (usually the latest flowering, frost-resisting sorts) and closely-set, upright petals, or loosely-set, more or less twisted ones.

Crocus. Though these bulbous perennials are dealt with briefly in the chapter "The Quickest Flowering Garden of All" their use in a garden of fibrous-rooted perennials may be emphasised here for use in gardening plans that are made anew round about Christmas. Crocus ought to be planted in September to bloom at their best, outdoors, the following February; but they will give a fairly good show if planted during open weather as late as the end of December, and their brilliant yellow, purple, silvery blue, and blue and white striped blossoms are invaluable to start off the display in any garden where flowers are wanted quickly—and that is everywhere—though of necessity the garden is entered into at a season making bedding-out impossible because of inclement, wintry weather.

Dahlia. This half-hardy tuberous perennial, like the chrysanthemum, has been developed and improved so much that all types of flowers, and plants from the new, small bedding kinds, eighteen inches, to the tall border kinds, four feet high, are obtainable. If the garden is in the South, and sheltered, the tubers may be put into the ground from mid-April to May, unless the weather is frosty. Cover over with leaf litter, or cinders, as a precaution against frost. Flowering should begin from the middle of July, and continue until frosts cut down the plants if the seed heads are removed as soon as formed.

An alternative plan is to buy the plants in pots from the nursery in late May, and carefully transplant into position. The taller sorts need staking. All dahlias are helped in bearing perfectly shaped flowers if small pots, half filled with moss or shavings, are placed inverted on the tops of stakes among the plants. These serve as earwig traps, and should be emptied daily into boiling water to kill the pests harbouring in them. Otherwise, earwigs will nibble the buds, and the blooms will be defective when expanded. Dahlias must have sun, and grow best on a fairly heavy, rich soil. The habit of the plant is compact, whether of the dwarf (Coltness Gem) type or tall, and they make most effective bedding and border subjects.

Delphinium. Although it is quite possible to get flower spikes in summer from the modern varieties of perennial Delphiniums if the roots are planted not later than the first week in March, it must be pointed out that Delphiniums, as a class, are at their flowering best about the third season after planting. To get quick-flowering results, plant good-sized, strong roots, and use loam and leaf mould compost liberally, along with rotted stable manure, in the soil filled in about the roots. The height varies from two to six feet—the latter for the hollyhock-flowered varieties which cannot be recommended, however, for quick-flowering results. The root clump does not increase in size rapidly until the plant is thoroughly established. To be seen at their best most Delphiniums must be staked, and they are best suited to positions at the backs of borders or centres of large beds. For general purposes the double, stock-flowered kinds are preferable. Their colours are some shade of blue, from pale Cambridge blue to deep mauve, and even purple. Varieties are obtainable that will maintain successive display from mid-summer until late autumn.

Dianthus. The perennials generally termed Dianthus include the border types of the carnation, border pinks, and the small, Alpine pinks or dianthus. The border carnations and pinks may be depended upon to furnish blooms abundantly from May to June, or even into July and August, with at least one sort, the Allwoodii, if the seed heads are removed. The height varies from six to twelve inches. The habit of growth is very compact, although the plants, after flowering, invariably extend side stems or runners, which root naturally, forming in time large cushions of spiky, grey foliage. Allow quite four times the original ground space, unless the plants are to be thinned or re-planted every three years at least. In most of these hardy dianthus the flower stem is short, but in some cases it is too tall for the weight of the blooms, and staking must be done. Dianthus prefer a light, and limy soil and plenty of sunshine. They will thrive on quite stony ground, and may be planted right up to the beginning of May if regularly watered until started into growth, flowering within a few weeks after planting.

Digitalis. The perennial foxgloves, to which the old-fashioned (wild) and Shirley Hybrid sorts belong, are invaluable for shady spots, flowering best when not exposed too much to the full sunlight. They like a rich, leaf soil compost, and are impatient of either sandy or heavy clay soils. The flower stem grows to a height of three to five feet, and the hybrids produce many lovely art tints as well as the dull crimson, and white of the wild types. The root does not increase rapidly in size, and the clump of large, pointed leaves will not occupy more than twice its space in as many years. They flower in June and July, and young plants rapidly spring up from self-sown seeds. For this reason, and because the flowerless spikes are unsightly, they should be cut down as soon as flowering is over.

9.—More Perennials for Quick Flowering.

Quite one of the most dependable of quick flowering perennials is the *Erigeron* (Fleabane), of which the border types grow from six inches to three feet high, although about nine inches to a foot is more usual. They should be planted not later than March, in a sunny position, and will flower in June–July. They are not particular as to soil. The root growth is fairly rapid, but not so quick as the perennial asters (Michaelmas Daisies) which this plant resembles in many ways. The flowers are borne, however, on single stems from the centre spike, and are always single, with yellow disc, though the colour may be pale lilac, pale blue, white, yellow, or pink. Erigerons are of sturdy, upright growth, and are best suited to massed effects in beds and borders.

Gaillardia. If roots of the perennial Gaillardias can be got in not later than early in March they will produce a supply of the handsome yellow and crimson flowers throughout the summer until November. They grow to a height of about three feet, and like a sandy loam. The clumps should be lifted and divided, every spring. Suitable for large borders, especially those adjacent to shrubberies. Must have sunshine.

Geums produce a wealth of richly coloured scarlet or orange flowers, single and double, in summer if planted in a light loam about March or April. The habit is compact, and the cushion of leaves, from which the flowering spike rise to a height of twelve to twenty-four inches, is not very quick growing. Geums make good subjects for massing.

Gladiolus. Although gladiolus corms may be left in the ground when flowering is over, in sheltered, southern gardens, it is best to regard them as half-hardy perennials and to lift them when the leaf spathes wither, storing them when dry, in paper bags in a frost-proof place for the winter. March is a splendid time to plant them, and they will give a good display, in the late-flowering sorts, even if not planted until April is well advanced. Quickest flowering results are got from them by purchasing plants in pots already well grown on in greenhouses, and planting out in early May. There is now such a large selection of varieties for successive blooming that the display may be kept up from June to November. They succeed well in sun, or semi-shade, and in all but clay soils. The colour choice is practically limitless, even to very deep mauves approaching black. Unless the planting is done in masses, much the best effect is got by planting in clumps of four to eight corms, all one colour and variety, a couple of inches between the corms, and a foot or so between the clumps. They may also be used with striking result as dot plants in large beds of low-growing, late-flowering bush roses.

Helenium (Sneezewort). Of late years this old-fashioned perennial has been considerably improved to give hybrid varieties that keep up the supply of yellow, or yellow and brown flowers, borne on stems about two feet high, from July onwards, instead of during September and October as was formerly the case. Heleniums will grow anywhere, although they prefer sunny positions. The root clumps do not increase very rapidly, and should be planted by mid-March to bloom the same season.

Helleborus. The Christmas, and Lenten Roses, are invaluable in any garden scheme because of the time of year when the former produce their large, cup-shaped, white flowers around Christmas or early in January. The Lenten Roses, bearing pinkish or wine-coloured blooms flower about March or April; and some sorts as late as May. To flower at Christmas the Hellebores should be planted not later than October. They like partial shade, and it is important to see that the roots are kept moist during dry weather. Those which flower in winter should have the flower buds protected by hand glasses, especially during rainy weather, to prevent the blossoms from soiling with mud. Height, six to thirty-six inches.

Hollyhock. To get quick-flowering results from this popular and handsome perennial, obtain in April or May vigorously grown seedling plants that have been grown in a greenhouse from December or January sowings. Put a rich soil compost containing plenty of rotted vegetable, and animal (stable) manure about the roots, watering well, but not too copiously, until established. Stake carefully as the flowering stems appear. Flowering should then take place to make a good show in August and September. There are both single and double hollyhocks, the flowers of the latter resemble coloured pom-poms, and are evenly placed up the stems growing to a height of six feet or so. Hollyhocks will flower in partial shade though preferring an open situation. They are massive and imposing plants, contrasting effectively with the later-flowering Delphiniums. The root clumps should be divided annually after flowering. The flowers are generally some shade of pink to maroon, or primrose to deep yellow; also white.

Iris. The bulbous-rooted Iris are most dependable for quick-flowering results, those having rhizomous roots (such as the common flag) taking some years to settle into flowering condition. Fortunately, there is now a large variety of colours in both the Spanish and English Iris, all of which may be planted, as bulbs (or corms) any time there is open weather in autumn, winter or spring, up to early March, to flower the same season. Height is about eighteen to twenty-four inches, and the Irises of this class prefer rather light, rich loams, although many of the Spanish Irises will bear their lovely flowers in any but the wettest clays, provided the position gets a good amount of sunshine. They, and the English, are most effective grown in clumps; but the bulbs should be an inch or two apart each way. If planted *not* later than October the bulbs of *Iris recticulata* will produce handsome blue flowers in January.

Lily of the Valley. The crowns should be planted during open weather in February and March to produce the lovely exquisitely perfumed flowers outdoors in April and May. Lilies of the Valley must have a shady, though not sunless, and rather moist position, and revel in a root compost of rich leaf mould and loam. They should be planted in clumps and, when once established, should be left undisturbed. Height, four to five inches. Always allow the leaves to ripen and die down naturally.

Linum. Both the Blue and the Yellow Flax are among the most delightful of perennials, flowering freely most of the summer if planted not later than mid-March. They like an open position, and prefer a light soil though they will grow in others. Height, about two feet. The delicate foliage is a pale blue-green, and the flowers of delicate texture and pale, clear blue or yellow. If the roots are small, plant them in clumps, two inches or so from root to root, to make a good show the first season.

Lupines. Both *Lupinus arboreus*, and *Lupinus polyphyllus*, the tree, and border lupines, growing to the heights, respectively, of about five feet and about three feet, are hardy perennials which may be depended upon to flower (the latter quite freely) within a couple of months of planting if put into the ground not later than the end of March. Owing to their branching and not very tidy habit of growth, the Tree Lupins are best suited to situations near a shrubbery at the backs of spacious borders, or to mix with flowering shrubs. The Polyphyllus group forms compact, close-growing clumps of elegant pale green, palm-like foliage with spikes of closely-set flowerets to form the flowering spike. They do not increase in bulk very rapidly and will not require dividing up for a couple of seasons after planting. If the seed heads are removed when formed the flowering period will be extended from summer into autumn. Tree Lupins like sunny positions; Border Lupines are less particular. Both revel in a good garden soil.

Poppy. The tall-growing, perennial varieties of *Papaver*, *P. nudicaule*, the Iceland Poppy, and the familiar Oriental Poppy, with its very large scarlet, pink, or orange flowers, and handsome, deeply-cut grey-green tuft of leaves, will all flower freely the first summer after planting in spring. The Iceland Poppy now obtainable (like the annual Shirley) in many lovely art tints, grows to a height of about a foot, and increases in bulk very slowly; but the large Oriental poppy is three feet high when in flower, and the root clump easily doubles its size within a year for which space allowance must accordingly be made. Both types undoubtedly flower better the second season onwards, though if strong clumps are planted, they will flower all right the first season, thus coming within the requirements of this book, for quickly-flowering subjects.

Pentstemons are hardy perennials which should be got in to their flowering positions not later than the end of March, to bloom in May, some six weeks later. Of compact, upright habit of growth, they are well adapted to bedding purposes, and are most effective grown in masses. As isolated plants in borders they prove singularly ordinary-looking, for the trumpet-shaped flowers borne at the tops of the stems point upwards, and are open, lacking the brilliantly coloured, closed ends which make the individual blooms on a spike of Antirrhinum (which also point upwards) at once noticeable though the plants may be growing widely apart. Pentstemons (the border types we are here discussing) like a light, sandy loam to which some leaf-mould has been added. If the ground is dampish or clayey, a roomy pocket should be made for each plant, filling in drainage in the bottom, before planting the root with its suitable light compost filled in carefully tor six inches or so all round it. Unless the food requirements of the plant are looked after well the growth will be weedy and straggly, and the flowers small and poor in colour.

Phlox. April will not be too late to plant roots of this handsome border perennial to bloom from July to August in its many beautiful varieties of to-day. The older-fashioned sorts bloom in July, but new kinds continue the show for a month later. There are all shades of red from palest pink to deep carmine; also lilacs and lavenders; and pure white. Most coloured Phloxes have the centre of the flower, or "eye," a deeper tint. The habit of growth is tall, and not straggly, so that Phlox are excellent plants for the herbaceous border requiring little attention after planting beyond watering in times of drought. In dry seasons flowers and foliage soon show the lack of moisture around the roots, and yet the plant is not one that thrives best on wet, clay land. A light, friable garden soil, and a sunny position provide the most congenial surroundings.

Phlox are among the few plants whose flowering period is not extended by cutting off the seed heads. All the same, the plants will present a neater appearance for the rest of the year if the flower stems are cut down to within a few inches of the ground. The height is about three feet, and the root clumps should be divided every second year. If the roots first bought are merely a single stem or two, with one flower head beginning to show—the usual appearance of plants from the nurseries—it is advisable to plant half a dozen such roots, a few inches apart each way, to form a clump. Young plants, with single flower spikes, standing apart from each other in the border are ineffective. Of course all those arranged in clumps as advised should be of the one colour and variety, i.e. to grow the same height, and thus seem to be one large, mature plant.

Primula. There are many hardy Primulas which make delightful spring, and early summer flowering perennials to bloom within a month, to two months from the time of planting. Indeed, a large proportion of these subjects, those belonging to the Primroses, and Polyanthus groups, are generally offered for sale in bud, or flower, and will continue to bloom without much apparent check to growth if kept well watered until new leaves pushing up from the centre of the leaf clump show that fresh roothold has been made.

Few spring flowers are more charming than the Primroses, either the Common Primrose, or one or other of the numerous coloured sorts, which are now obtainable in varieties that produce double, as well as single flowers. Double Primroses, by the way, are really very old-fashioned cottage garden flowers that have lately been restored to popular favour, and improved in type. Polyanthus, too, have been immensely improved of late years, and many of the foreign Primulas of hardy species—the tall *Primula florindae* (The Giant Himalayan Cowslip), three feet high; *Primula microdonta*, w'th violet flowers, eighteen inches high, and *Primula Beesiana*, violet-purple with golden eye—and their cultivated varieties, are now available to increase the show of flowers in newly-made gardens.

Without exception, the Primroses, and Primulas require a light, and rather leaf-soil, compost, that is moist, but not too wet. That is to say, that is well-drained, but not chalky, or limy or too sandy, and thus apt to become caked, and hard in dry weather. Though they like a fair amount of shade, sunless, cold positions are fatal to many of the more delicate sorts, including the Common Primrose. An unfavourable position, or unsuitable (e.g. heavy, black clay) soil, causes primroses, and primulas to gradually dwindle and disappear. The root tuft is compact and neat, the flower stem rising clear of it. Growth is rapid after flowering is over, each rosette of leaves forming a plant, increasing up to a dozen times and requiring to be split up into almost as may new plants by mid-summer or autumn to prevent a poor show of flowers the next season. Many Polyanthus and Primroses will flower again in autumn and winter in favourable situations.

Pyrethrum. The single, and double flowered Pyrethrums will freely flower in May and June, and may continue to do so for a month longer if the seed heads are snipped off at once. The roots may be planted until mid-April to flower the same season. They will do well in any good garden soil, and a sunny position. The root growth is low, and compact, the flowers being carried on tall stems about a foot to eighteen inches high. If the position is at all shady the flower stems become too tall, and twist about, untidily, but in an open, sunny position the growth is firm and upright, and they do not need to be staked. Root division is required every second season.

Among the Pyrethrums are included the golden-foliaged sorts, varieties of *Pyrethrum aureum*, largely used for edgings. To keep neat it must be pinched back frequently, otherwise the tall flower spikes, bearing a rosette of small, white flowers with yellow centres, make the plants too tall for anything but the fronts of borders. Where allowed to flower, and seed, it is freely self-sowing.

Sweet William. This hardy biennial is obtainable in varieties bearing single and double flowers, although the former are much more usual. They are of almost all colours excepting blue shades and yellows; but including white. Usually there is an "eye" of darker tint, but pure selfs, i.e. flowers of one colour, are also seen. They will flower in an ordinary soil in June or July from roots planted as late as April, the habit of growth remaining compact, at a height of about eighteen inches. Sweet Williams are most effective massed, either in one colour, or in mixed colours. The *Sweet Wilvelsfield*, a hybrid between the Sweet William and the Allwoodii pink requires similar treatment, but is less hardy. It remains in flower, however, throughout the summer.

10.—Roses to Flower Quickly.

In the opinion of most people a garden without roses is a garden lacking in its most lovely flowers. Not only is the rose fancifully termed the Queen of Flowers but it is, in one or more of its almost innumerable varieties, the flower most in evidence in all kinds of gardens, great and small, wherever one may look in this country. For these reasons, a Special Feature on Rose Growing (page 64) is included in this volume.

It is useless to ignore the fact that for the best flowering results from roses the newly-designed garden must be in the categories referred to in the chapter on perennials that are planned some time between October and March. But, here again, the truth is that the finest blooms come from roses that have been in their flowering position a good eighteen months. However, since fairly fine roses will be better than none at all for the owners of new gardens, it may be said there is every prospect of getting a reasonable show of bloom the first season from bushes planted in the ordinary way not later than mid-March; or from others planted at any later date than that, out of pots, i.e. in the way advised for typical bedding-out plants.

Choosing Roses for Quick Flowering.

If the roses are to be planted as dormant roots either bush, half-standard, or standard types will be equally likely to give flowering results the first season provided free flowering varieties, selected from those presently to be described, are chosen. But if they are to be planted from pots, then undoubtedly the best results will follow the use of bush roses, dwarf Polyantha roses, or ramblers, or pillar roses, if the two latter types are sturdy, well-grown plants on stakes, and already well-set with flower buds.

If the roses are being planted in February or March (or earlier) as dormant roots, have nothing to do with plants whose young wood (the green stems) is at all shrivelled looking. Roses of that sort have been too long in the shop, or too long out of the ground at the nursery. They may still have life in them, and survive all right with careful treatment, but they will not give quick flowering results if, indeed, they flower at all their first summer in the garden.

Give the preference to roses having smooth, fresh bark, and plump leaf buds. Should there be frost in, or on, the ground, place the roots in a bucket of rain water—just a little, in the bottom of the bucket—in a dark, frost-proof place, until all the frost is out of the ground. Of course, try to avoid buying the roses when there is the least prospect of frost. If the roots are well wrapped up in sacking, with earth about them (as they should be) then just lay them on their sides in the cellar, or similar place, covering the wrappings with cinders, or unfrosted soil until weather conditions are favourable for planting. It must be emphasised that the frost must be all out of the ground. Even slightly frosted soil filled in around the roots of newly planted roses will prevent them from getting the favourable send-off so necessary if they are to flower in about three months after planting. When planted out of pots after March, naturally this danger seldom exists.

SPECIAL FEATURE

PERFECT ROSE GROWING

No garden is complete without roses few or many. The Queen of Flowers must have a place whether the garden be small or large. If ample ground is available for the purpose a suitable plot may be devoted to the making of a rose garden, but there are many whose gardens are not of sufficient size to permit of so much space being devoted to a single flower.

Let us look at the different ways in which roses may be used in the garden and the best way to do this will be to divide the roses into different types.

Types of Roses.

The standard rose is a rose grown on a single stem to a height varying between three feet six inches and five feet. It may occupy any position in the garden. It is often used in the mixed border and in beds, it is a favourite in the rose garden and is indeed suitable for any position where roses are grown in the open.

The Bush Rose, as its name implies, has no stem but is grown to the form of a bush. It varies in size from the dwarf polyantha bush which planted in suitable surroundings will provide a glorious mass of colour from June to well on into December, to the larger and better known varieties grown to the bush form. Rambler roses grown from cuttings will provide a bush between these in size which will rival the polyantha for the length of the flowering period. Bush roses may be used in borders, in beds, they may in some cases be used as hedges in which case they will prove exceptionally attractive during the period of flowering, in beds or in the rose garden, either intermixed with standards or alone.

The Rambler Rose has been well named; it is the rose which sends its quick growing branches rambling all over the place, and a good deal of attention is needed to keep them in position. It is not grown on a single stem except when it is used as a weeping standard. It will decorate an arch or a pergola. It may be used to form a hedge or as a pillar rose, or to cover a screen. Its masses of colour in such positions cannot fail to attract the eye and to add to the charm of the garden.

The Wichuraiana Rose differs from the rambler in that it is more trailing in its habit. It may be used on banks and is suitable for pegging down.

Climbing Roses are all suitable for walls, and some are suitable for other purposes such as the decoration of arches and pergolas or as pillar roses. Some of the more tender kinds should be given a wall in a sheltered situation if they are to do well; few are suitable for a north wall. They are not as a rule so quick growing as the ramblers, but some such as the Banksians will cover a very large space in time.

Preparing the Land.

To get the best from our roses when they are planted thoroughness in the preparation of the land is essential. It is important also that the ground should be prepared some time before the roses are planted. The treatment of the land will depend upon the kind of soil with which we are dealing. A deep good loam is the most suitable, but comparatively few gardens possess a soil exactly right. Fortunately the rose is not too particular, it will grow and flower well on a wide range of soils if care is taken in the preparation of these.

In dealing with a heavy clay land, deep digging is important. It is scarcely possible to go down too deep on this class of land. It should be forked to a minimum depth of two feet, three feet is preferable and it should have worked into it at the same time as much rubble and grit as can be obtained, this will greatly improve the texture of soil of this kind.

On light soils the positions the roses are to occupy should be dealt with separately. Holes should be dug at each spot and loam and manure which has been well mixed and allowed to stand in the heap for some time should be forked into the bottom. The same mixture should be used for filling up the holes after the roses are planted.

On land of a chalky nature horse manure should be used but no lime. Land should be rich but manure should not be too freely applied. It is a safe guide to apply a barrow load of manure to each square plot of land having sides three yards long. If manure is not obtainable when the land is being prepared the roses may receive a mulch regularly to take the place of this.

When to Plant.

There is a good deal of difference of opinion among those who specialise as to the best time to plant roses. The fact is that roses may be successfully planted at any time during the autumn, winter or spring if preparations have been thorough and the planting is carefully carried out. Whatever occasion is chosen for doing the work, weather and soil conditions should be suitable. Roses are not likely to succeed if they are planted during frosty weather, when snow is on the ground or when the soil is saturated with moisture.

Many persons make the mistake of planting roses too deeply. This is a common error with many when dealing with trees or bushes of any kind, but it is a mistake which is detrimental to the health and growth of roses no less than to other trees and bushes. Six inches is usually a suitable depth for roses, the soil at the bottom of the hole should be lightly forked over, or where it has been necessary to dig a deeper hole and replace the soil which has been removed with loam or manure of better quality, it is advisable to tread this down. The holes should be sufficiently large to allow the roots to be spread out without crowding. Standard roses will usually need staking and if it is decided to use stakes for these, the stakes should be placed in position after the holes are dug but before the roses are placed in the holes. Stakes should not be too tall, reaching just below the heads of the standards.

Firm planting is essential and as the soil is replaced in the hole it should be trodden well down several times before the filling in is complete. If the roses have been planted in the spring and the weather is very dry a thorough soaking may be given to the roots as soon as they are planted.

Pruning.

Pruning is perhaps the most important work with roses after these are growing in beds or borders. The method of pruning will depend upon the purpose for which the bloom is wanted and the habits of the different roses. The time of pruning will depend upon the kind of rose. It may be taken as a general rule that roses may be pruned in March or April, the latter month being most suitable for those in cold districts, and for the more tender kinds.

When pruning standard roses, old wood should be cut right out at the base so that the head remains open. Branches should be cut back more or less severely according to the purpose for which the roses are wanted. For garden decoration the branches or shoots are cut back to within six or seven buds of the base, the heads will then produce an abundance of flowers of reasonable size. If the bloom is wanted for exhibition or for table decoration more severe cutting back will produce fewer but finer flowers.

Bush roses for garden decoration are cut back to within six or seven buds of their base, but if the bushes are weak or if very fine bloom is needed the bushes may be cut almost down to the ground level; it is a mistake to cut back bush roses needed for garden decoration too severely.

Rambler roses should have all the old wood that has produced flowers cut away, tying the young shoots in position to take the place of these. The same treatment is suitable for Wichuraiana roses.

Climbing roses usually need very little pruning, all that is necessary is to tip them, at the same time taking out branches which are not wanted, and if the climber is beginning to get old, cutting out one or two of the oldest branches each year at their base so that there may be a continual fresh supply of young wood to keep the rose in health.

The soil round the base of roses should be kept clean and lightly forked over once a year. A mulch of farmyard manure should also be applied round the base of the trees and bushes annually, although I have known roses produce abundance of flowers, year after year, for a considerable time without this assistance.

Green-fly attack is the most common trouble with which those who grow roses have to contend. The old fashioned remedy of soap and water will do a great deal towards preventing injury from this trouble if the trees are syringed with the mixture early in the morning or in the evening once or twice a week. After the soap has been dissolved, twice as much more water should be added. See that the undersides of the leaves get their fair share or the treatment will not be effective.

There are many good washes on the market which will destroy this pest if they are used according to the directions.

Apart from planting roses in beds and borders or to run over arches and pergolas as our taste and fancy dictates, the rose garden, should we desire such a delightful retreat and should space permit, will need special consideration.

It is not necessary that the garden should be exceptionally large in order to possess a rose garden. If carefully designed even comparatively small gardens may have a portion devoted almost exclusively to this delightful flower. The position for a garden of this kind should be sheltered from the cold, but it should not be in the shelter of or near to large trees, as the ground where roses are to grow should be free from other roots. It should if possible be enclosed by a hedge or a fence, with of course free access by paths.

The beds forming the rose garden should be simple in shape. They will vary in number according to the size of the garden. The beds should not be designed separately but as a part of the whole garden.

Different types of roses should be planted so that variety is given in the height of the beds. A rose garden made up entirely of bush roses of similar height would have a very flat appearance. Standards may be planted with bush roses. Polyantha roses may be used in smaller beds, and both rambler and climbing roses should find a place for arches and pillars.

A good deal of thought should be given to the choice of varieties. Colours should not be mixed indiscriminately, the attraction will be greater if careful massing is practised. This does not imply that the whole garden should consist of a mass of roses of a single colour, but each bed may consist of roses of one colour and variety, which harmonise with roses of a different colour and variety in adjoining beds, the choice being made so that the roses throughout the whole of the beds form a definite colour scheme.

If it is desired, small plants such as bulbs or saxifrages, may be planted in the beds in which roses are growing. Many gardeners affect to despise this method, but it certainly adds to the beauty of the garden and there is no real reason against its use. Another method is to plant small flowers as border plants to the rose beds, and some charming effects may be obtained in this way.

Paths may be of any material except tar. It is unfortunate that the tarred path is becoming more and more common in our gardens. It is true it is clean in the wettest weather and it does not need weeding, but in the rose garden it is definitely harmful to the roots of the plants and should be avoided.

Varieties.

Any attempt to give the names of valuable varieties of roses must of necessity be incomplete. There are several hundred excellent kinds and these are being added to year by year. All that it is possible to do is to suggest a few good roses which have established themselves in the public favour and which will remain popular for many years to come. Always the most satisfactory way of making a choice is to pay a visit to a rose specialist in the flowering season and from the roses as one sees them in flower make a selection of the kinds that appeal.

Shot Silk is a Hybrid Tea which was introduced in 1924. It is aptly named, for its name describes the bloom very well indeed. It is a rose of several shades of pink, the pink being over shot with orange, the base being pale yellow. When the soil suits it this rose flowers freely from the middle of summer until a severe frost stops it. This is a fine rose for bedding purposes, indeed there are few to surpass it in beauty.

Mrs. Sam McGreedy is another Hybrid Tea which was introduced in 1929. It is exceptionally well shaped both in the bud and in the flower stage, and its colour is delightful, being a mixture of scarlet and coppery orange. It is upright in growth and vigorous without being coarse. This variety again is especially well adapted for bedding purposes.

Hugh Dickson is a Hybrid Perpetual which came before the public about 1904. There are few red roses to equal this either in popularity or beauty. A point of the greatest importance when this rose is grown in the garden is that it should be much more lightly pruned than is necessary with most roses, as if it is at all severely cut back the roses will be lacking while there will be plenty of wood growth and foliage.

Chaplin's Pink Climber is a comparatively young climbing rose having been introduced as late as 1928. It is a clear bright pink in colour and retains this colour well. This beautiful climber flowers from the middle of June.

Golden Salmon is a Dwarf Polyantha rose of great beauty. It came out in 1926, and the flowers which are exceptionally large remain fresh for a long period. Weather conditions make very little difference to the blooming of this variety and it does not suffer from mildew attack.

American Pillar is a rose which is too well known to need description here. Its lovely rose-pink single flowers with a white eye are seen everywhere roses are grown. It flowers rather later than some varieties.

SPECIAL FEATURE

HOW TO GROW BEAUTIFUL CARNATIONS

Garden Cultivation.

Carnations were, until a few years ago looked upon as purely greenhouse plants. It is true that there were certain classes grown in the garden, but from almost every point of view these were inferior to those grown in a greenhouse. Because of its popularity to-day as a garden plant we will deal with the cultivation of this lovely flower first of all for garden purposes, afterwards describing for those who have glass available, how to grow this glorious flower in the greenhouse.

One advantage the carnation has over many other plants is that its flowers are exceptionally hardy. If grown under glass and afterwards exposed to frost they may become frozen, but once they have thawed they will again be as beautiful as ever, whereas once a chrysanthemum has become frozen it is useless, and this applies to the majority of flowers.

It was not until the introduction of the Perpetual Border Carnation a little over twenty years ago that the flower came to have its highest value in beds and borders as a garden plant. This carnation is the result of a cross between the Perpetual Flowering Carnation and the old Border Carnation. The value of this type of carnation lies in the fact that it is perfectly hardy, the severest winter will not destroy it, and that it produces an abundance of bloom from the spring until late autumn or winter. The old type of Border Carnation of course flowers during the height of the summer only, and in spite of the perfection of its bloom this must of necessity rob it of a good deal of value as a garden plant.

Propagation.

The most usual method of increasing both the old Border Carnation and the Perpetual Border Carnation is by means of layers, although they can be increased by either seeds or cuttings if desired. The best results are obtained when layering is carried out some time between the end of June and the first week in August, although it is sometimes delayed until September. Where this is done, however, the result is not nearly as satisfactory. Strong growths will be wanted for layering and if these are present it does not matter whether or not the plant is in flower at the time the work is done. Having decided upon the growths to be layered the next thing to do is to strip off the leaves from these growths to within four pairs of leaves from the top.

If the carnations from which layers are to be rooted are growing in a good loam, the soil round the base of the plant will need no attention. If on the other hand the soil is not all that it should be the soil round the base should be loosened and three inches of fine sandy soil should be spread round the plant.

This is an ideal mixture in which the layers will root well.

Just beneath the joint below the leaves which have been stripped from the growth a slit must be made in the stem with a sharp knife, taking care not to cut too far through the stem or to entirely sever the stem when making this slit. When the slit has been made in this way it is a good plan to insert a piece of match stalk in this to keep it open. The growth is then bent at the point at which the slit has been made and pressed into the prepared soil to a depth of about half an inch, where it is firmly pegged in position by means of small pieces of branch of a suitable shape for the purpose, or pieces of wire bent to the form of pegs. In the old days hair pins answered this purpose admirably. Care should be taken to cover the joint with soil once it is in position. This may be done until each plant has two, three or more layers round it, the number varying with the number of suitable growths. When the layers have been carefully pegged down in this way and the joint covered with the fine soil, they should be well watered. If the weather is dry, watering should be carried out at regular intervals as it is important that the soil round the base of the plants should be kept in moist condition until roots have formed, this will almost always be in about a month or five weeks from the time of layering.

Planting.

By the time autumn arrives, the plants should be well furnished with roots; they should have been separated from the parent plants and feeding themselves. This is by far the best time for planting these carnations in the garden. Some growers, however, prefer to pot up the plants at this time, keep them in a frame throughout the winter, and plant them in beds or borders in the spring, mostly in March. I prefer the simpler method of putting the plants in their places in the autumn, that is unless the positions they are wanted to fill are occupied with other plants during the winter and early spring months of the year.

Before the plants are put out in the garden, however, whether this is in the autumn or the spring, the soil must be well prepared to receive its guests. About a month before the plants are to be put in the beds or border where the carnations are to go should be deeply dug and a little well rotted farmyard manure should be worked into the land. This should be six or seven inches beneath the surface. The quantity of manure used should be strictly limited, as it is an easy matter with carnations to do more harm than good by using manure too freely. After digging is completed the land should be firmly trodden down. In the case of a heavy clay soil old mortar rubble or cinders should be added to make this more suitable to receive the plants. After planting the soil round the base of the plants should be trodden down very firmly.

Care During Flowering.

Most likely about April in warm districts and during May in the north or in colder parts of the country (the actual time varying a little with the spring weather conditions) the plants will begin to send up flower stems. When this happens the stems should be given support. It does not matter a great deal what form this support takes so long as it serves the purpose, is neat and adds to rather than takes away from the appearance of the beds or borders in which the carnations are growing.

The next question is, how best to feed the plants so that they will produce an abundance of richly coloured bloom. This can best be done by applying liquid manure or soot water to the plants in small quantities about twice a week from the time that buds begin to make their appearance until the end of the flowering season.

So far we have dealt with the carnation only from the point of view of making a good display in the garden. For this purpose it is not necessary that the individual blooms should be exceptionally fine. If flowers are wanted for the house or for exhibition however, it is desirable that the separate blooms should be as fine and colourful as possible. To attain this end a certain amount of disbudding will be necessary. A good deal will depend upon the varieties grown as to how severe this should be. Some of the favourite varieties produce their buds evenly spaced down the stem. In this case little disbudding is needed where the plants are wanted for home use, although for exhibition purposes some of the buds will have to be removed. Where the varieties produce several buds at the top of the stem it is desirable to reduce the number of these a good deal whether the bloom is wanted for adorning the home or for exhibiting.

What has been written about disbudding applies more particularly to Border Carnations, the Perpetual Border Carnation does not need treatment in this way. Apart from this difference, however, the treatment and general method of culture is the same for both types.

A method of getting the plants to continue flowering later than usual consists in removing all buds as they appear until the end of June or well into July. If this is done the plants will begin to flower later and will continue to produce bloom, often until well into the winter months.

Other Situations.

It must not be thought that Perpetual Border Carnations are suitable only for growing in beds and borders. There are many other places where they may with advantage be grown. They are suitable for cultivation in the cold greenhouse, the methods of cultivation being exactly similar to those needed for the Perpetual Flowering Carnation dealt with later in this section. They may also be grown in window boxes, in which case young plants may be taken from the garden in the spring. One point should be remembered if it is desired to plant these carnations in window boxes at any time during the flowering period. At least a fortnight before it is desired to transfer the plants to their new positions all buds and flowers should be picked off. They will then have a reserve of strength to establish themselves in their new positions. These carnations are also suitable for hanging baskets The best way to get good results is to line the baskets with moss and fill them with compost or a good loam, afterwards planting the carnations in this. Care should be taken with the watering when grown in this way. Although not often used for the rockery, hardy carnations are quite suitable for such a position; when used for the rockery they will usually do best if planted among stones.

Annual Carnations.

Some types of carnations are treated in the catalogues of seedsmen as annuals, the seed of these is sown under glass during January or February and transplanted when weather conditions are favourable. Treated in this way the plants will begin to flower during July and will continue to do so until the winter and if mild conditions prevail they will provide flowers well into the winter months.

Perpetual Flowering Carnations.

This type of carnation owes its great value to the fact that, although it needs heat during the winter, the amount of heat required is only slight and it may be had in bloom throughout practically the whole twelve months of the year. It is also useful as a summer bedding plant.

The usual method of propagating this type of carnation is by means of cuttings. Cuttings should be rooted in a house having a temperature of about fifty degrees if a little more bottom heat is available to encourage the formation of roots so much the better. Mostly the cuttings are rooted in sand, but successful results may be obtained with a very light loam or with a mixture of sand and loam. Shoots chosen for use as cuttings should be about four or five inches long and should be taken from plants which are both vigorous and healthy. If taken from plants which are even slightly attacked by disease, this will show again in the new plant and the whole of the work will be wasted. The cuttings should be firmly inserted in the rooting medium. They should not be allowed to get dry, but at this stage they require comparatively little water. As soon as roots have formed, however, water may be given more freely.

Air is not needed until the cuttings are rooted, but if these are grown in a propagating frame the light may be taken off for a short time each morning so that the inside of the glass gets dry. This should not be done unless the propagating frame is inside a greenhouse.

Potting.

When the plants are nicely rooted they should be carefully transferred to small pots, two inch are suitable, one plant to each pot. The compost used may vary to some extent but a mixture consisting of three-quarters good loam and the remainder equal parts leaf mould and silver sand will be found to answer very well. When the young plants have been placed in these small pots they should receive a good watering. After this, however, water should be given with a good deal of caution, but the soil should not be allowed to become thoroughly dry.

Continue this treatment until the pots are well filled with roots when the plants should be transferred to pots of a larger size. The compost used may be the same as before. The pots are best placed in a position near to the light as this will encourage the growth of sturdy plants.

There is a difference in the character of growth of different varieties of Perpetual Flowering Carnations. Some of these will send out a quantity of side shoots naturally, others will not do so. If the plants show no sign of sending out side shoots by the time the young plants begin to grow upwards for flowering it will be time to stop them by pinching out the growing point.

Another move into larger pots may be made during March, but many amateurs prefer to have them in their flowering pots at this time without any further moving, especially is this the case if they have been rooted after the new year. In any case it will be advisable to stop the plants a second time during July. In warm districts the growths may be stopped a week or two earlier than this.

Summer Care of the Plants.

During the summer months until September or in warm districts early October, the plants should be placed in an open position. If it is possible to do so, provision should be made so that they can be temporarily covered during heavy rain or hail storms, as it will be realised that we are not altogether free from the latter even in the summer months. Watering should be attended to regularly so that the roots have access to sufficient moisture without any excess of this, while a sprinkling overhead at regular intervals will also be beneficial. If soot water is available this may be used for watering with excellent results.

When the plants go back to the house for the winter the temperature should be kept at between fifty and fifty-five degrees F. It is a good plan to fumigate the house with nicotine now and again, but if this is done the directions should be closely followed or an expert should be asked to do the work, as it is risky stuff for amateurs with little knowledge of its very poisonous properties to handle. Watering, all the way through should receive careful attention. It is one of the most important points in the cultivation of this plant. Given to excess it may be responsible for a good deal of loss, but given so that there is always moisture (without being wet) for the roots, it will keep the plants in perfect condition, especially if a plant food is applied either in the liquid or in the dry form.

Disbudding and Staking.

This is a matter for the consideration of the amateur. Mostly a certain amount of disbudding will be necessary to obtain bloom of good quality, but the buds that are taken off should be removed gradually. It is better to leave all surplus buds on the plants than to remove the whole of these at once. Little has been said about providing supports for the flower stems, these will be needed, but it is a matter of common sense and the materials available as to the form that these should take. So long as the work is carefully done this is all that matters.

Plants that have flowered through the winter in the greenhouse and are well furnished with flower buds may be used as bedding plants during the summer and will provide a display of colour until late autumn.

Perpetual Flowering Carnations are worth keeping for two years, as there is little, if any, falling off in the quality of the bloom if the plants are well looked after. One point is of importance with all carnations if they are to be induced to produce a useful supply of high grade bloom for long. The flowers, whether for the house, or to remove faded flowers from the plants, should always be cut with long stems. If this is done one is more than half way to success, so far as the continuous flowering of these plants are concerned.

Malmaison and Perpetual Flowering Malmaisons.

These are amongst the finest of all carnations, but they are a little more difficult to grow to perfection than are most other classes. These carnations are best increased by layering, but apart from this difference their treatment is similar in all respects to that of the Perpetual Flowering Carnations, except that a slightly lower temperature will satisfy the plants, the night temperature for Malmaisons being kept at round about forty-five degrees instead of fifty.

Nothing has been said about varieties, because there are so many from which choice may be made of equal merit that to mention a few in any of these classes would be misleading. Also new varieties are being introduced each year and to give the best this season will be to leave out exceptional varieties introduced later.

SPECIAL FEATURE

THE COLOURFUL SWEET PEA

For wealth and variety of colour whether in the garden or in vases and bowls in the home there is no plant that can equal the sweet pea. It is equally at home in the tiny cottage garden or in the garden of the mansion. No matter what other seed may be left out of the order which is sent to the seedsman, sweet peas will certainly be included.

Although this plant is so delightful there is no doubt that it is not always as well grown as it deserves to be, for the sweet pea responds perhaps more than most flowers to considerate treatment and it well repays the amateur who gives it what it needs in the way of soil conditions and feeding.

It is no use scamping the job if sweet peas full of rich colour and of good size with a fair number of blooms to the stem are desired, the work must be done thoroughly. The more thorough the preparation the better will be the result.

Importance of Drainage.

Drainage should be one of the first considerations, unless the land is well drained it will not be possible to grow sweet peas as they should be grown. If there is any doubt as to whether the soil in which the sweet peas are to be grown is as well drained as it should be this should be given attention before anything further is done.

Sweet peas may be grown to perfection on quite a number of different kinds of soil and soils which are not in the first place altogether suitable may often be so treated that they will grow excellent bloom. The ideal soil for this flower is, however, a good deep rich soil where the roots of the plants can have free play. It may be said that with thorough preparation even stiff clays and shallow gravel soils may be induced to provide a really fine display of this delightful flower.

The situation in which the sweet peas are grown is important.

They do not like to be shut in, or in other words they will not do well if planted in the shadow of other tall plants. What they like is a sunny, open situation where they can obtain plenty of light and air.

Soil Preparation.

Perhaps few of us give the land the preparation it needs if our sweet peas are to be really first class. The best time for preparing the ground is in the early autumn, and it is a good plan, unless the land is known to be already well supplied, to apply a dressing of lime. Although it is desirable if at all possible to get the land ready in early autumn so that it becomes well weathered, where it is not possible to do this it will not be too late to obtain good results if the land is prepared some time during the first three months of the year, that is before the end of March, but the earlier it can be got ready the better.

Deep working is essential. The land must be broken to a good depth, but the subsoil should on no account be brought to the surface. The best method is to take out trenches two feet wide and three feet deep, keeping the bottom soil separate so that when replaced it will be returned to the bottom of the trench. The subsoil must be well broken before being replaced and should have three or four inches of well rotted manure a small quantity of soot and bone meal mixed with it. When the trench has been filled in to a depth of about ten inches, the second ten inches should be treated in exactly the same way until the top foot or so is reached, when no manure should be mixed with the soil but bone meal should be used at the rate of a half pound to every four yards.

If it is intended to grow the sweet peas in clumps rather than in rows, a piece of ground four feet square should be broken up and treated in the same way.

Another method is to trench the ground to a depth of two spits, break up the soil at the bottom and work into the bottom a quantity of decayed manure.

On very light soils a layer of fresh manure may be placed at the bottom of the trench or square if the work is done some months before the sweet pea seed is to be sown. The object of doing the work so early if fresh manure is used is so that the seed should not come into contact with it as this has been known to cause disease.

If the soil is of a very heavy nature rather different treatment will be advisable. In addition to the use of decayed manure at the bottom of the trench, old lime rubble, mortar, burnt earth or cinders should go in so that the land is much more open than it is in its natural condition.

As the lower layers of soil are replaced they should be well firmed by treading, but the top layer should not be trodden down.

If it is possible to do so the whole of the ground may be dealt with in the manner described, but most of us have parts of the garden already planted with some permanent occupants and have to be content with dealing with a trench or squares of soil in the way described.

The Seed.

Sweet pea seed should be bought from the most reliable source possible. Unless good seed is obtained no amount of soil preparation will give really good results. This is true whether or not named varieties are to be grown. Not always is new seed the best with sweet peas, everything depends upon the weather conditions during the time the seed was brought to maturity. Seed which is a year old, if it has matured under ideal weather conditions may be very much better than new seed in a bad summer when it has had no chance at all to mature properly.

Having obtained the seed, it may be sown to germinate either under glass or if conditions are favourable in the open, but here a good deal depends upon the time of sowing and there is no doubt that autumn sowing will usually give the most satisfactory results.

From the second week in September to the second week in October is the best time to sow in the open ground, but this should only be done on warm, well drained soil. When sown in this way the plants should be thinned out to six inches apart as soon as they are of sufficient size. On colder land or in more exposed districts spring sowing will be desirable, if this is so February and March will be the best months for doing the work. Seed should not be sown in bad weather or when the prepared soil is in bad condition owing to the weather. A dry day is best and it is often a good plan to soak the seed in warm water over night. The seed is sown about one and a half inches deep, about three inches apart, and later as previously stated thinned to six inches, the best time to do this is when the plants have reached a height of about four inches.

Mostly it will be found that the plants will produce finer bloom if the seed has been sown in pots and germinated in frames or under glass. Sixty pots are a good size to use and three seeds are sown in each pot. If other sized pots are used the number of seed to each pot will vary with the size of this. The compost with which the pots are filled may consist of three parts fibrous loam, one part leaf mould or old hot-bed manure and a small quantity of sharp sand. It may be mentioned that the quantity of sand will vary to some extent with the variety of sweet pea to be grown. White varieties as well as the mauve and cream kinds need more sand and not as much water as do other varieties. In this connection it may be mentioned that both cream and white varieties have nearly white seed coats, mauve and lavender kinds are spotted and are very often wrinkled. Picotee, crimson and carmine kinds have a very thick seed skin and in order to help the seed to germinate more freely it is sometimes the practice to slightly cut or file through the skin, taking care not to do this at the point where damage is likely to result to the embryo plant.

Boxes may be used instead of pots, if desired, the boxes being about four inches deep, holes being made for drainage, and they should be filled with a similar compost to that used when the plants are grown in pots. If boxes are used the seed is sown two inches apart each way.

When the seed has been sown, which is best done during October, the pots or boxes are placed close to the glass in cold frames to ensure steady growth. If the seed is germinated in a greenhouse the boxes or pots should be placed on a shelf near the glass and the greenhouse should be kept cool. The pots or boxes containing the seed should be well watered at the time of sowing, but should be watered very carefully and sparingly during November and December. If grown in a cold frame the lights may be removed as often as possible when weather conditions are favourable.

As soon as the plants have made four pairs of leaves the tops should be pinched out, and if grown in boxes they should be transplanted singly into pots. Where four or five plants are grown to a pot the number should be reduced at this time to about three, the weakest being removed.

If grown in a cool greenhouse the plants will need hardening off before being planted out.

The best time for planting out will depend upon several factors. In the North or in cold districts it will be from two to four weeks later than in the South or in warm parts of the country. Usually from the beginning to the third week in March is suitable for warmer districts, and from the middle of March to the middle of April in districts which are more exposed or colder.

The plants should be spaced from a foot to eighteen inches apart in double rows or in clusters. Some growers cut the roots but we do not think that this is advisable. What is important is that the soil should be worked to a sufficient depth and that the plants should be planted deeply enough for the roots to go downwards. Another important point is that the plants should be planted firmly.

If no pots or boxes are available for seed sowing and it is still desired to germinate the seed in frames in the autumn, the following method may be tried and will prove equally successful. Squares of old meadow turf are obtained. Into these squares holes are dibbled and in each hole a single seed is placed. The turves are then placed in a cold frame not too far from the glass. It is essential if this method is followed that a plentiful supply of air should be admitted on all favourable occasions and that the turves should be kept reasonably moist to assist germination. When the time for planting out arrives in the spring the turves are divided by cutting into squares so that each square contains a single young plant. The divisions are then set out in the places where they are wanted for flowering. A big advantage with this method is that the plants suffer no check at all from the time the seed begins to germinate uutil they are in full flower.

The amount of water needed by sweet peas when these are in their flowering positions is important. It is just as serious to over water as to under water. If really first class blooms are wanted, both mistakes should be avoided. For each yard in length of the row a gallon of water given at the beginning of and towards the middle of each week will be about right. This quantity should be reduced to some extent in very wet weather and increased slightly but not to a very great extent when the weather is dry.

Staking and Other Matters.

Sweet peas need support, but the manner in which this is provided is not of very great importance so long as it serves its purpose. As soon as the plants are put out, if it is not possible to supply their permanent supports at once, short twigging pieces should be temporarily placed alongside the plants. If the plants are wanted only for garden decoration longer sticks furnished with a fair number of twigs such as are used for staking peas or beans will answer admirably. For exhibition purposes or in order to provide very fine bloom for the house the plants are best supported by bamboo canes which should be about ten feet in length. It is also an excellent plan when very fine flowers are desired to nip off all side shoots and tendrils as they make their appearance. If allowed to remain they take from the plant a good deal of nourishment that will be better used in improving the size and quality of the bloom. When the plants are about eight or eight feet six inches high they should be removed from their support and laid along the ground, being then given new supports of a sloping nature so that their tops are from three feet to three feet six inches from the ground. This treatment should be carried out about three times during the period of growth.

Feeding.

To obtain really richly coloured bloom, the plants must be given the right kind of nourishment. Unless they are properly fed the flowers cannot be above average in quality. It is not, however, advisable to begin feeding too early after planting out. As a rule no feeding will be needed until the first flowers begin to open. A convenient way to apply the nourishment to the plants, as and when this is wanted, is in the form of liquid manure. From the point of view of improving the richness of the colour of the plants there is nothing better than soot water. This may be made by hanging a bag containing old soot in a tub or other receptacle containing water for several days. The bag is then removed and the water applied to the base of the plants at intervals. Always before applying liquid manure of any kind to the sweet peas, however, it is a good plan to water the base of the plants with clear water. The best water to use for making liquid manure is soft water, but if tap water must be used it should be exposed to the air for a time before being applied to the plants.

A half-pound of guano to ten gallons of water makes another excellent food for sweet peas and this should also be applied at

regular intervals. Fowl manure may be used in the same way as guano, if desired, and will give almost equally good results. It is as well to remember that if water is applied really cold to plants, whether in the form of liquid manure or alone, it will cause the buds to drop and in this way do more harm than good. It may be mentioned that it is not necessary to use only one kind of fertiliser whether used in the liquid form or in dry condition. Far better results will be obtained by ringing the changes, using one fertiliser or liquid manure one week and a different one the next week, the third week going back to the first fertiliser. It is not advisable, however, to change the fertilisers too frequently.

Keeping Free from Seed Pods.

If a long flowering season is desired the bloom should be cut regularly, and on no account should seed pods be allowed to form, as this is always fatal to the production of further flowers of any value. The most satisfactory way of ensuring this is to go over the plants regularly about twice a week. Unless a point is made of doing this at regular intervals, the work is almost certain to be neglected or forgotten during a bad spell of weather and the period during which the plants will continue to flower is likely to be cut short by the formation of seed pods.

Sweet Peas Under Glass.

Sweet peas may be grown to flower under glass, the method of cultivation being very similar to that required for outdoor culture. Seed is sown during the last half of September in frames and planted out in January in rows about four feet apart. The plants are supported on wires or strings. The after treatment is similar to that for open air culture, but watering should be carried out very carefully at first. Later on, however, much larger quantities will be required. It is important also that when the weather is at all suitable as much air as possible should be admitted, but no direct draught should be allowed to blow on the plants.

SPECIAL FEATURE

BULB GROWING FOR THE GARDEN AND BOWL

It is generally agreed that the term bulb should include such subjects as the crocus, gladiolus and montbretia among others which in reality grow from corms and that some tuberous rooted plants such as the begonia and tuberous anemone should be classed with bulbous plants. This is a matter of convenience.

Not all tuberous rooted plants are included with bulbs in this way as the treatment needed in their cultivation differs to such an extent that it would be misleading to do so.

Having then, cleared the air as to the type of plants it is intended to deal with in this section we will go ahead. There are few flowers for the garden so valuable as spring flowering bulbs of the daffodil (including narcissus), snowdrop, hyacinth and tulip. These give a display of colour when there are few other flowers available for that purpose.

Even less numerous are the plants which can take the place of these and a few others also bulbous rooted, for flowering in bowls during the winter months.

Because of their value in the early part of the year it will be as well to deal with bulbs, corms and tubers first of all for the spring garden, and we will give that old favourite the daffodil, always again including narcissus, the first place.

Few amateurs realise the wide range of beautiful daffs that are to be had to-day. It will pay anyone who wishes to have a further supply of these, to visit a daffodil farm or a daffodil show before making a choice. It is not too much to say that there are some magnificent varieties to be had.

There are tiny dwarf daffodils suitable for the rockery, there are trumpet and narcissus types suitable for beds and borders.

Although daffodils are hardy, however, if you wish for a really fine display of colour at the proper season they must be grown under as favourable conditions as possible.

Soil and Preparation.

Soil is the first consideration, although not particular as to this, most varieties will do best on a medium soil which is well drained. No member of the daffodil family will do well if its roots are in stagnant water for long. Heavy soil may be brought into suitable condition by the addition of ashes, or a small proportion of sand. If on the light side, fibrous loam or burnt earth may be added. In any case daffodils like an occasional dressing of lime.

The land should be well worked to get it into suitable condition and while it is difficult to give exact advice as to the depth of planting, it will usually be safe to bury the bulbs three times their own depth.

Late August or throughout September is the best time to plant daffodils, although they may be planted any time in October. This is on the late side.

Lifting.

It is a common mistake to lift daffodils planted for their garden effect every year, or even every other year. Unless there are very urgent reasons why they should be moved they may with advantage be allowed to remain in the beds or borders for as long as they retain their vigour and flower well. If disease makes its appearance they should, however, be lifted and carefully sorted, before replanting elsewhere. Mostly from three to four years will be the length of time they will grow well without lifting.

Another common mistake made by many owners of gardens is to cut off the foliage before this has died or at least turned yellow. To do this robs the bulb of part of its store of nourishment which it will want for next season and the show of bloom the following year will be poor. If it is decided to lift the daffs, this should not be done before the foliage is dead.

When planting daffodils in beds different varieties should not be mixed in a haphazard manner. Keep to one or two varieties which should have a well defined arrangement. With beds of any size low growing plants may be planted for carpeting and will improve the appearance of the bed. Daffodils with some such carpeting plant form a fine foundation for a bed of roses.

Daffodils in borders should be planted in groups. Only one variety should be used for one group but different groups may consist of different varieties. At least nine or ten bulbs planted a few inches apart in irregular formation should form a group.

Bulbs look well naturalised in grass, if the grass is in such a situation that it need not be cut until the flowering season is over, make a pretty picture. The thing to remember is to plant in masses, small or large, according to the size of the piece of grass to be dealt with, using only one variety for one mass. Bulbs forming these masses should be about four inches apart.

It is possible here to give the names of only a few varieties of the many that are suitable for the different positions mentioned.

For beds or border, Admiration, Blackwell, Emperor, Empress, J. B. M. Camm and King Alfred are a few well known kinds that are suitable. For massing in grass, Golden Spur, Sir Watkin, Emperor, Poeticus recurvus and Madame de Graaf are all suitable.

Among the delightful small varieties suitable for the rock garden may be mentioned, Minimus, Cyclamineus, Dawn, W. P. Milner and Triandrus albus.

In addition there are many new varieties suited for each of these situations, but I have thought it better to name well established kinds that have proved themselves specially suited for the purpose for which they are mentioned.

Daffodils in Bowls, Vases and Pots.

For decoration of the home in the early months of the year, nothing is more delightful than bowls or vases of daffodils. They may be grown in water to which a little charcoal has been added, in moss fibre or in compost.

If grown in glasses or shallow bowls containing water the bulb or bulbs should be so arranged that the water does not quite touch the base of these; in each vessel of water a lump or two of charcoal should be placed in the bowl or glass. When planted the bulbs are placed in a dark cupboard which must be both cool and dry and remain there until roots two inches long are formed, after which they may be placed in medium light in a cool room. The water must be replaced as it is absorbed by the plant and reduced by evaporation. September and October are the best months for planting bulbs in this way.

For growing daffodil bulbs in moss fibre, place a layer of charcoal at the bottom of the bowl and fill this to within about an inch and a half of the top with moss fibre which should be lightly, but not tightly, pressed. The bulbs may be placed so that they barely touch one another, and should be just covered by the fibre. The fibre should be well moistened. After planting, the surface may be covered with about an inch of ashes for a time. This covering should be carefully removed when the bulbs begin to grow. The bulbs should be placed near a light window and turned carefully each day. When it is necessary to water, this should just have the chill taken off it.

Grown in pots, ornamental or otherwise, the treatment is exactly the same as when grown in bowls, in fibre, unless loam is used to fill the pots in which case the flowers will be produced about a fortnight later.

Tulips.

Tulips are quite as popular in the garden as are daffodils and in some respects they need similar treatment. In one way, however, they differ markedly. Tulips should be lifted every year and replanted rather later than daffodils. The best time is during October or November. Of the two months November is to be preferred and many growers have planted as late as the third week in December and have obtained a fine display of bloom the following spring. If the bulbs are planted early the leaves will be exposed during a very cold part of the year, and this may injure the plants.

Depth of planting, with tulips as with bulbs of all kinds, is important. Tulip bulbs should be covered with about four inches of soil.

Unlike daffodils, tulips do not do well in grass.

Tulips for bedding may be planted alone or with carpeting or edging plants. A few plants suited for this purpose for both daffs and tulips are double white arabis; Viola Maggie Mott; Scilla hispanica, and with tulips only blood red wallflowers.

A few useful tulips are among the Darwins, Clara Butt, a very well known soft pink; Elephant, a fine lavender-mauve; Pride of Haarlem, cerise, and Eclipse, deep maroon red having large bloom.

Early single varieties include, Canary Queen, soft primrose with a deep lemon edging; De Wet, an orange variety with red veins, very fine.

The method of growing tulips in bowls is exactly the same as for daffodils, so that it is not necessary to repeat the information. Kinds to grow include the Darwins, Clara Butt, Mrs. Farncombe Sanders, Pride of Haarlem and Gipsy Queen. Among single tulips suitable for this purpose may be mentioned White Swan, Pink Beauty, Canary Bird and Grace Darling. Doubles include Princess Beatrice, Duke of York and Blue Flag.

Hyacinths.

The hyacinth is a charming flower. Its possibilities for the garden have only in recent years been exploited to the full. There is an array of delicate, delightful colours, from which choice may be made which render this plant particularly suitable both for bedding and for decorative purposes in the house.

Hyacinths are rather more particular than either daffodils or tulips as to soil. They prefer a light, rich, sweet soil, but they may be grown on heavy land if sand is placed in the holes in which the bulbs are planted. Hyacinths must have sun. They will not succeed planted in the shade. They should be planted during October, and in very cold situations protection should be given. Hyacinths may be planted in beds carpeted with suitable low growing plants, or they may be planted as the only occupants of the beds. Double red daisies make a delightful combination with salmon hyacinths and scarlet hyacinths with Silene pendua compacta, a pink variety.

Hyacinths in Bowls.

Hyacinths are particularly suitable for growing in bowls and excellent results may be obtained whether these are grown in moss fibre or ordinary moss. Grown in the former this plant may be had in flower at Christmas without any great difficulty. When growing hyacinths in bowls there are three points that must be remembered if success is to follow. The bulbs should not be kept in a warm room heated with a fire or failure is almost certain, neither must the fibre be allowed to become sour by stagnant moisture and the roots must on no account be allowed to become dry.

Apart from this the method of culture is similar to that of other bulbs grown in bowls or fibre.

Crocus.

The crocus is not at all difficult to grow but it is a plant that few of us would like to do without. There are varieties for both spring and autumn flowering. June and July is the best time for planting autumn and winter flowering kinds, while spring flowering crocuses are planted in the early autumn months of the year.

The Snowdrop.

This is a favourite with most of us because it flowers in the darkest months of the year. Once snowdrops have been planted they should not be disturbed for many years as they like a permanent home. August is the best month for planting if bulbs can be obtained at this time. If not as soon after as possible.

Bulbous Iris.

Bulbous Irises include three groups, the Dutch, the Spanish and the English. There are delightful kinds in each group. One or two varieties may be had in flower in the garden in winter, as early as almost any other bulbous plant, but the majority flower a good deal later than this. This class of iris need not be lifted every year, although the bulbs should not be allowed to remain in the ground for any length of time. English bulbous irises will grow on heavy land, but the Spanish and Dutch kinds need a good light loam, to show at their best.

Gladiolus.

The Gladiolus grows from a corm, but as stated at the beginning corms as well as some tuberous rooted plants are classed as bulbs in this section. Charming new varieties of this delightful plant are continually being introduced and marked improvement has been shown in the types available during the last few years. This is a summer flowering plant and the corms should be lifted in the autumn, cleaned and stored in trays until the following spring, when they are replanted. The mistake most commonly made with this plant is that of putting the corms in the ground too late in the spring. In the South the latter half of February and the first fortnight in March is about the right time. In the North and in colder districts the last half of March and the first half of April will be the best time for planting. A fine dry day should be chosen for doing the work.

If planted later than this the plants will not have a sufficiently long growing period to grow and produce bloom to perfection.

It is not a bad plan, however, to plant at intervals with a fortnight or three weeks between, from February to the middle of April in the South and from March to the end of April or early May in the North. This will ensure a regular supply of bloom over a long period for both garden and home, especially if early and later varieties are put in at each planting.

Water should be given during a very dry spell of weather and the plants when in flower will need supporting by the use of neat bamboos or by some other suitable means.

Lilies.

The Lily or Lilium, as it is generally called in gardening books, is a big family having a wide range of plants. Failure results when amateur gardeners begin to grow these perhaps more often than with any other plant of a bulbous nature. The key to success with these plants lies in the fact that with most of them the bulb should be planted in a cool, shady spot, moist perhaps, but free from stagnant moisture, while the stem, foliage and flowers should be in full sunshine. If this is remembered there need be little fear of failure. The way to do this is to plant round and near the plants some low growing subjects which will shade the ground where the bulbs are growing, but which will not reach such a height that they will prevent the sun from reaching the foliage and flowers.

Lilies may be grown in pots in a mixture of fibrous turfy loam, leaf mould and sharp sand. The time for potting is during the autumn or early spring months of the year.

Begonias.

These beautiful plants would be more widely used for beds and borders if it were more generally known that they will do well in partial shade. The tubers are started in boxes, in heat, in February, hardened off in May and at the end of May planted in the garden when they will provide a glorious display of colour from some time about mid-summer until October.

Ranunculus.

There are some beautiful members of the buttercup family of which the Turban strain is the hardiest and most suited for growing in exposed positions. This strain should be planted during the autumn or winter, but the Persian strain which produces double flowers is better planted during the early months of the year.

Other Bulbs, Corms, etc.

There are other flowers used in the garden, so many of them in fact, that if each were dealt with separately they would need a large sized book to themselves. This, however, is not necessary. Other bulbous plants fall into one of the classes of which the methods of cultivation have been given here, and it would merely be going over ground already covered to give details of each of these separately. In addition many of these are of minor importance as they are by no means first favourites, and it has been thought better to choose as examples bulbous plants which are first favourites and which few amateur gardeners can resist attempting to cultivate, because of their beauty in bed or border, or grown in bowls or vases in the home.

SPECIAL FEATURE

HOW TO GROW AND TEND A LAWN

It is not possible to pay too much attention to the making and care of the lawn. A neglected lawn becomes a mere weedy mossy plot of neither use nor ornament.

No part of a garden can claim to be of such importance to the whole as is a well kept lawn of whatever size. It is fresh and cool in summer and in the winter it remains green.

The amount of moisture in the soil should be taken into consideration when deciding upon a suitable position. A dry situation is unsuitable and should be avoided, at the same time good drainage is essential. It may be convenient to remember that the north side of the house is one of the best positions for a lawn, a position where it is often difficult to obtain attractive results with flowers.

There are two methods employed; by sowing seeds and by laying turves. A lawn grown from seed takes longer to develop, but if the preparation has been well carried out and good seed is obtained it will be even in texture and free from weeds. A lawn laid with turves will be ready for use the first season, but unless the greatest care has been taken in the selection of the turves, many weeds will be introduced which will later be difficult to eradicate.

From Seed.

In growing a lawn from seed both preparation and the grass mixture sown will depend upon the kind of soil. Lime is essential if the grass is to thrive and a dressing of this should always be applied to the chosen site unless it is known that the soil contains a sufficient quantity. Drainage has been dealt with in an earlier chapter and no more need be written about this here except to emphasise its importance.

When preparing the ground, but before any attempt is made

at levelling the site it should be remembered that grass is comparatively deep rooting, and the surface preparation should go down to a depth of at least six inches. On heavy land the soil should be thoroughly pulverised, lime will assist in this. The land may with advantage be roughly dug over in the autumn as frost is particularly beneficial on heavy soils. Sand, grit and similar material should be worked in if at all possible as this will improve heavy land a good deal.

Light soils should have a good dressing of well decayed farmyard manure dug in, but apart from this these need comparatively little preparation except where there are a great many stones, these should be removed from the surface by picking or by sifting.

Soils altogether unsuitable, such as those containing a big proportion of peat, should have the top layer, or the greater part of it removed to a depth of a few inches and replaced with good loam.

Levelling is important, but with care the work is not as difficult as is generally thought. Any obviously high points should be reduced. A number of pegs should then be obtained as should also a board with two straight-edges and a spirit level will be needed.

The stakes should be from ten to twelve inches long and one of these should be driven in at a point where the soil is at about the level it is desired to make the lawn. The top of the peg should be a half inch above the soil surface. Another stake is placed in position and the straight-edge placed across the pegs with the spirit level on the top. It is then an easy matter to knock in the second peg to the depth required. Other levels are taken in the same way until the surface of the lawn is dotted with pegs the tops of which are all at the same level. It is not a difficult matter then to level the soil so that it reaches within a half inch of the top of all the stakes.

After the surface has been levelled it should be worked into a fine mould for receiving the seed. The best months for seeding are April or September. The stakes are of course removed after all levelling is completed.

Laying Turves.

If it is decided to lay turves, a suitable piece of pasture should be obtained, where the grass is free from weeds and of a reasonably fine texture. The turves should be cut to a thickness of two inches and the usual size of turves is three feet by one foot, each turf being rolled for removal. It will often be found that greater satisfaction will result by cutting the turves to a smaller size, say one foot six inches by one foot, and keeping them flat. The soil is levelled in the manner previously mentioned and prepared in the same way, but it should be reasonably firm and may need rolling. It is important that it should be given a thorough soaking with water before the turves are laid. The whole of the site should not be watered at once, but a piece at a time, so that it is thoroughly sodden when the turves are put down. The roots will then be attracted to the moisture and the turves will become established in their new positions much earlier than they would otherwise. After the turves are laid they should be well rolled.

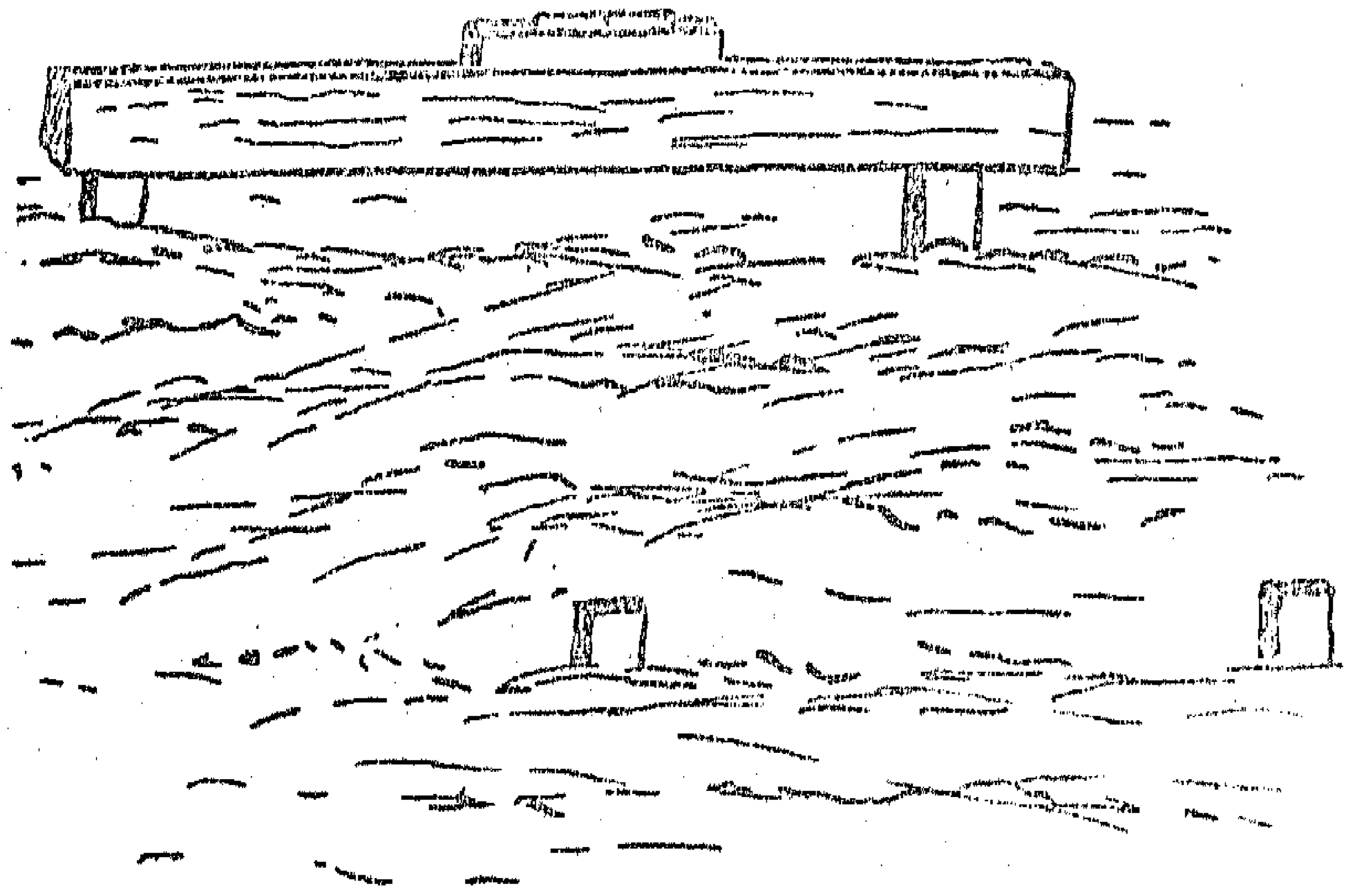

Fig. 2.—Levelling Ground for a Lawn.

Care of the Lawn.

The longer a lawn has been down the better should be its surface if it is well cared for. The condition of the surface of a new lawn, however much care may have been expended in making it can never approach that of a well cared for lawn which has been down for some years.

The lawn should be regularly cut, but at first it should not be cut too closely, later it will be an advantage to cut

it as closely as possible. Cutting should begin early in the season before the grass gets long. A lawn cannot be maintained in good condition in dry weather without watering. If this is neglected the surface will become brown and unsightly, and only repeated heavy rains will bring it back to its proper condition. When it is found necessary to water a lawn the watering should be very thorough, a mere sprinkling is of little use. The water should be applied before the surface of the lawn has become brown. It is a much more simple matter to keep a lawn fresh and green, than it is to get it back to a green state once it has lost its colour.

The roller may prove as harmful as it may be useful on the established lawn. Winter rolling is often particularly detrimental as it gets the surface into very bad condition often causing a crust to form. Occasional rolling after a shower of rain during the season that cutting is in progress should be all that is needed, but a very heavy roller is not desirable.

A little attention each year, before the time to cut the lawn begins, will prevent it becoming unsightly with weeds as does so often the grass where weeding is neglected. Small weeds should be removed as well as large weeds and it is best to place them in a basket as they are taken out of the ground so that they can be carried away. Where big, bare places are left owing to the removal of large weeds, a little fine soil should be sprinkled over the spot and a small quantity of grass seed sown on the patch.

The grass will occasionally need a pick-me-up if it is to remain in first class condition. It is usually sufficient if suitable fertilisers are applied every third or fourth year.

A dressing of slaked lime at the rate of three-quarters of a pound per square yard should be applied to sour soils in the late autumn, this should be raked in or the surface soil should be lightly pricked over with a fork.

Sulphate of potash applied at the rate of an ounce to the square yard will improve the grass on light or medium soils, it should be applied in the spring. On heavy soils twice the quantity of bone meal should be used either in the autumn or the early spring.

If the lawn has a lot of moss in it a sprinkling of equal parts old soot and wood ashes will be found to keep the spread of moss in check and encourage young grass to grow. Lawn sand is also useful for destroying weeds and moss. It should be scattered lightly over the surface of the lawn in spring.

Sifted farmyard manure is an excellent tonic for the lawn, it should be applied to the surface in January or February so that worms can work it into the ground.

Renovating the Lawn.

It often happens that when a lawn has been down for a year or two, although it was perfectly even at the beginning, hollows begin to show at various spots. The land beneath the lawn sinks here and there, although it was made perfectly level at first. It is not possible to form any idea as to where a new lawn will go down in this way but it nearly always happens, and it almost always occurs where the garden is an altogether new one.

When levelling out depressions, a square is marked out round the place where the lawn has gone down. If the depression is not large it will only be necessary to mark off a small square. If the hollow is a large one a square of some size should be marked out round the hollow. The turves inside the square over the depressed part are then carefully cut and removed to the side. If there is only a small hollow to deal with this will not be a big job, only two or three or at the most half a dozen turves will have to be lifted. If the hollow is large a much greater number of turves may have to be removed. Fresh soil of good quality with no lumps in it is then used to fill up the hollows. Whether it will be necessary to use pegs and level the soil in the same way as when laying a new lawn will depend upon the size of the hollows, for small depressions there will be no need to do this, but for larger hollows the more thoroughly the work is done the better will be the result. When the hollows have been filled in firmly and evenly the turves are carefully replaced, the soil being first watered in dry weather to give the roots a good start.

Exhausted and Worn Lawns.

Sometimes patches in a lawn become exhausted, grass refuses to grow as it should, although weeds if left to themselves will flourish; or the surface may be badly worn owing to continued use. Often a little care in the way of the application of suitable fertilisers will put this right, but sometimes the surface gets so bad that more drastic measures will have to be taken before the lawn will look as it should again.

The quickest way to patch the bare places is with new turves. If this method is adopted the work will need doing with the greatest care so that the lawn may be perfectly level and the turves may become properly established in as short a time as possible.

Seed sowing is an alternative method, but by this method a certain amount of preparatory work will be necessary if the bare patches are to be properly covered with grass and to have the appearance they should. An iron rake should be used to pull the surface of the soil about where the seed is to go, and this may with advantage have a fairly heavy weight fastened on to the top of the business end so that the prongs will sink well into the land. If this is not done the rake must be pressed well into the soil as it is worked. Another method is to use a fork, the surface being very lightly forked over and afterwards lightly raked. Both methods serve the same purpose of getting the land ready to receive the seed.

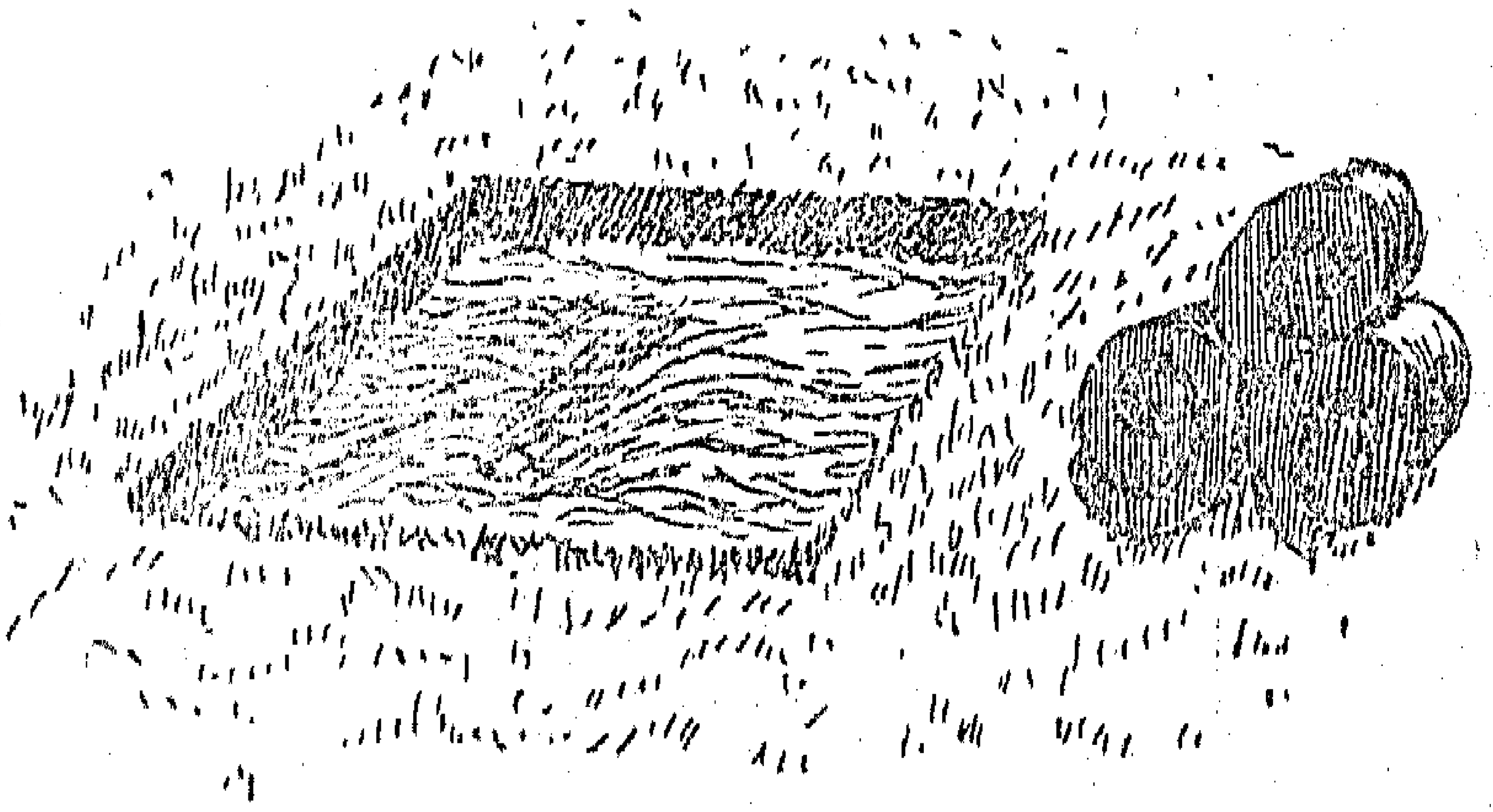

Fig. 3.—Removing a Bad Patch in the Lawn and Replacing with Fresh Turves.

Good seed must be used and to ensure this the seed should be obtained from a reliable firm. It is important to spread the seed evenly over the bare places, to make sure of doing this it is a good plan to mix the seed with a quantity of fine soil, taking care not to overdo the amount of soil used. When the seed has been spread evenly over the prepared places in this way, from an eighth to a quarter of an inch of fine soil should be spread evenly over the newly sown part. It is best if the soil used for a covering is first of all put through a fine sieve. The surface should be lightly raked over and afterwards just as lightly rolled. Some birds are very fond of grass seed and if the opportunity occurs will undo all the work that has been done by devouring a lot of this before it has any chance to grow. Protection in some form must therefore be provided. The best way to protect the seed from the attention of birds is the well known method of stretching black thread or cotton backwards and forwards across the newly sown part or parts.

How to Cut a Lawn.

When a lawn has been grown from seed or when bare places have been resown with seed it is a mistake to try to cut the young grass with a mower at first. The grass should be allowed to grow to such length that it can be cut with a scythe, as by doing so the tender young blades of grass will not be injured in the way that they might be if a mower were used. Cutting with a scythe should be carried out twice before any attempt is made to use a mower on the young grass. Once a mower has been used, however, it is a mistake to leave the grass at any time too long between cutting. In the spring, with an established lawn, the scythe should not be used, the grass should be gone over sufficiently early in the year for the mower to do all the cutting needed. During the growing season a healthy lawn and one that is well provided with plant food cannot be cut too often, although most of us have to be content with running the mower over the grass once a week.

SPECIAL FEATURE

HOW TO MAKE ROCK AND FANCY GARDENS

The Rockery and Rockery Edgings.

The attractiveness of any garden is increased by the presence of a rockery. No matter how small the garden may be, space may be found in a corner for a small piece of rock work. It may be only a yard or two across or it may, if space is no object, be of considerable size.

The materials used in making a rockery vary a great deal. All kinds of stone are brought into use for this purpose, some are excellent, others are not so good. A great deal in the selection of stone will depend upon the material to be obtained near at hand. The most unlikely material, in the hands of one possessing artistic taste, may be converted into something of real beauty. For this reason we have little patience with those who tell us that such and such stone should be avoided at all costs and on no account should this or that be used.

Before the material is chosen the site should be selected. The position will depend largely upon the general lay-out. It should not be a thing entirely to itself as is so often the rose garden, but should have its approach along one of the main paths.

Drainage is a matter of importance. A rock garden cannot properly succeed if it is built on a badly drained piece of ground. High buildings should also be avoided although a certain amount of shade is not uncongenial to many rock garden plants. It should be the aim of those who wish to have a really beautiful rockery to so build it that the rock plants growing in it will be living in as natural surrounding and under as natural conditions as possible.

Although we have written that almost any kind of stone may with skilful treatment be made attractive, natural stone is preferable to artificial stone where it is to be obtained.

Limestone and sandstone are both suitable and one of these can often be obtained near at hand. Cement should not be used except as a last resource and the greatest care should be exercised that it is not obtrusive. Granite is a natural rock which although it is so hard and to some extent unsuited to plant life, possesses that rugged appearance which is so desirable in the rock garden.

In the arrangement of the rocks, these should not be used too freely. The pieces of stone that are used should be placed firmly in position, taking care that the arrangement is as varied as possible. The rocks should be so placed that there are ample pockets between them in which suitable plants may be placed. Needless to say, these pockets should be varied in size. Mostly the soil of the garden has to serve to fill these in, but with a little care this may often be improved. Rock plants prefer a rather gritty soil of a light loamy nature and this should be the aim. If the soil in the garden is naturally of a heavy nature, the addition of grit and fine rubble will improve it or ashes and sand may also be employed for this purpose.

Where it is thought undesirable owing to lack of space to construct a rockery, a rockwork edging to the garden paths makes a delightful finish. An edging of this kind may be confined to flower borders or it may be used in the kitchen garden with excellent effect. Flowers for an edging of this kind should consist of those of a low, rather spreading nature, so that the stonework sets these off to the best possible advantage. Stones for the path or border edging should not usually be placed more than about six or seven inches above the ground. In order that they may be held firmly in position they should be partly buried in the soil. Care should be taken not to make the edging too irregular.

Wall Gardens.

The use of a specially constructed wall as a garden is not new, although it is only recently that the wall garden has reached the popularity it deserves. Properly placed a wall garden undoubtedly adds to the charm of the place, but a good deal of care and thought should be expended in arranging the position and size of this.

A suitable position for a wall garden is at a change of levels. The wall to be used as a garden will not be of sufficient strength to hold back the soil, and other support must be provided for this purpose. No mortar is used in the building of a wall of this kind, the spaces between the stones being filled in with soil. A wall connecting two levels in the manner suggested should not be perpendicular, but should slope steadily back from the lower to the higher ground, the slope should be between one in six and one in ten. The plants may be planted as the wall is being built or this part of the work may be left until later. Either method will give satisfactory results if carried out with care, but it is difficult to give proper attention to the arrangement of the plants if these are placed in position while the building is going on. Seeds may be sown in the crevices, if desired, and this method saves expense, but

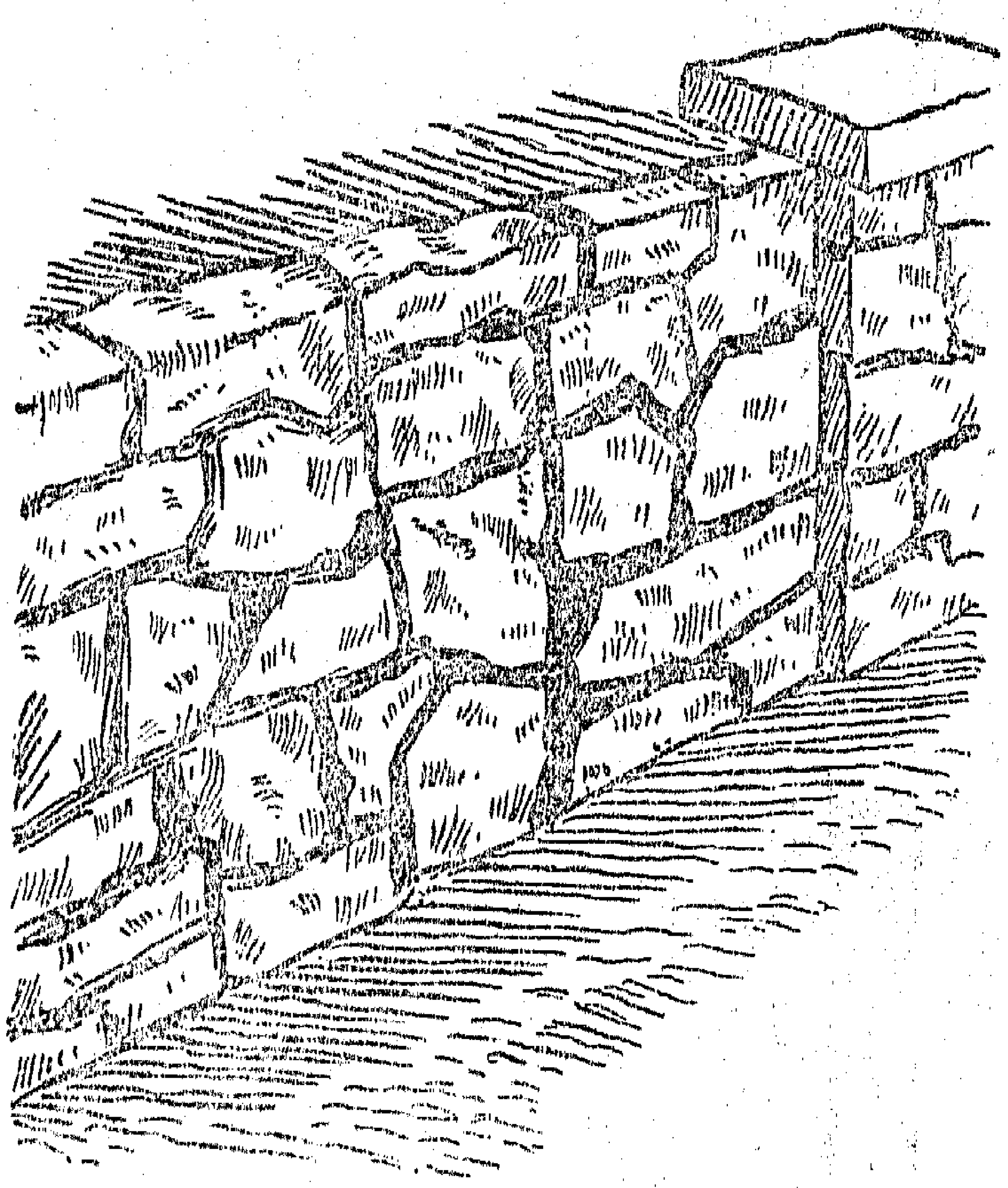

Fig. 4.—Method of Making a Wall, showing Spaces between the Stones and the Gentle Slope backwards from the Base.

in many ways it is less satisfactory. The materials used for the wall garden are the same as for the rock garden. Limestone and sandstone are both suitable but they should be a little more regular in shape than when used for rock work. Other material which must not be despised for this purpose consists of clinkered bricks or the bricks obtained from old buildings. New bricks should not be used as they are incongruous.

The tops of old brick built walls may be utilised if they are flat. A little soil is placed in the cracks which may be increased in size, and plants inserted or seeds sown here. If it is desired to plant on the face of the wall, it will be necessary first of all to scrape out some of the mortar from the joints and to replace this with soil. With walls of this type only plants which require very little root hold should be used. Those that require a good depth of soil for their needs will be starved.

Rock Plants in Crazy Paving.

Delightful effects may be obtained by planting alpines and other plants suitable for the rockery in crazy paving, whether this is used for a path or a surround to an ornamental pool.

Plants for the Rockery and Rockery Edgings.

In making a selection of plants for the rock garden, it is not usually necessary to omit any because of unsuitability of soil. As a rule the pockets and crevices may be filled with the kind of mixture favoured by the plants that are to go in them. A matter of greater importance is the position of the plants as regards sunshine or shade. If a part of the rock garden is in shade and a part in sunshine one has a very wide choice of plants available. If it is in a sunny position plants which like shade should not be chosen when making a selection. If it is in shade it will be inadvisable to include plants which need sunshine when deciding upon the inhabitants of this section of the garden. It may be stated here that, because there are rock plants which will thrive in shade, very attractive rock gardens may be made on the north side of a wall. A further consideration is the length of time that the rock garden will display masses of plants in flower. A long flowering season should be the aim in making a selection. The plants should be so

distributed that during spring, summer or autumn the garden will appear brilliant with flowering plants. There is also the difference in the character of the plants which must be thought of. Some rock plants always remain small and compact, never making a great deal of growth, others spread very rapidly, quickly covering quite a large area of the rocks with which they are surrounded. Naturally in making a choice of plants, a limited number only of plants which spread rapidly should be used, while plants which always remain small may be planted in larger numbers.

Separate lists follow of rock plants which will grow in sunny positions and those which like shade, the kind of soil favoured by the plants is also given, as is also the height and the flowering period.

Rock Plants for Sunny Positions.

Name.	*Height.*	*Colours.*	*Soil.*	*Flowering Period.*
Acæna	Varies	Vary	Ordinary	June to September
Achillea Clavennæ	Six inches	White	Gritty	July
Achillea rupestris	Six inches	White	Gritty	June and July
Androsace Chumbyii	Three inches	Pink	Gritty	May to June
Arabis albida, fl. pl.	Six inches	White	Ordinary	March to May
Campanula muralis	Six inches	Blue	Gritty	April to July
Dianthus alpinus	Three inches	Rose	Gritty	Summer
Draba aizoides	Three inches	Yellow	Gritty	Spring
Erigeron aurantiacus	Six inches	Orange	Sandy	May and June
Gentiana acaulis	Six inches	Blue	Light	May and June

Name.	*Height.*	*Colours.*	*Soil.*	*Flowering Period.*
Geranium cinereum	Six inches	Rose	Light	May to July
Geum	One to two feet	Scarlet, Orange, Yellow	Light	Summer
Gypsophila cerastoides	Creeper	White	Sandy	May to July
Iberis sempervirens	Six inches	White	Ordinary	May to July
Leontopodium Alpinum	Eight inches	White	Chalk	Summer
Mertensia alpina	Six inches	Blue	Ordinary	May
Onosma tauricum	Twelve inches	Yellow	Gritty	Summer
Phlox subulata	Spreading	White	Light	May and June
Saxifraga (various)	Three to eight inches	Rose, Yellow, White	Gritty	Spring and Summer
Sempervivum arachnoideum	Spreading	Pink	Gritty	July

Rock Plants for Shady Positions.

Anemone Hepatica	Six inches	Various	Loam	Spring
A. angulosa	Six inches	Blue	Loam	Spring
Campanula pulla	Three inches	Purple	Gritty	May and June
Ourisia coccinea	Twelve inches	Scarlet	Peaty	Summer
Primula rosea	Six inches	Rose	Damp	Spring
Ramondia pyrenaica	Six inches	Mauve	Peaty	June
Shortia galacifolia	Three inches	Pink, White	Peaty	Spring

Plants for the Wall Garden.

When choosing plants for a wall garden the position of the wall should be considered. There are plants which will thrive on a wall in shade and others which need the warmth of the sun. There are again plants better suited for positions on old walls than for places in specially built wall gardens, but mostly if the plant is suited for such positions at all it will thrive on either kind of wall. With a little trouble it is usually possible to give the plants the soil they require, so that we need not limit our selection because of the difference in the needs of the different plants. In arranging the plants it is advisable to aim at the mass effect rather than to dot the plants about singly in a haphazard manner.

Plants for the Sunny Wall.

Name.	*Height.*	*Colours.*	*Soil.*	*Flowering Period.*
Acæna adscendens	Six inches	Purplish	Ordinary	Summer
A. Buchanari	Trailing Plant	Bluish Grey Leaves	Sandy	
Achillea tomentosa	Six inches	Yellow	Ordinary	Summer
Antirrhinum (Snapdragon)	Six to twenty-four inches	Various	Ordinary	Summer
Aubrietias	Creeping	Various	Ordinary	April to June
Campanula muralis	Six inches	Blue	Ordinary	April to June
Centranthus ruber	Two feet	Scarlet	Chalk	July to August
Ceterach officinarum (Fern)	Three inches	..	Rubble	..
Cerastium tomentosum	Three inches	White	Gritty Loam	June

Name.	*Height.*	*Colours.*	*Soil.*	*Flowering Period.*
Cheiranthus (Wallflower).	Twelve inches	Various	Ordinary	Spring
Dianthus Cæsius	Six inches	Rose	Ordinary	Summer
D. alpinus	Six inches	Rose-crimson	Ordinary	June and July
Erinus alpinus	Three inches	Reddish purple	Ordinary	June and July
Iberis (Candytuft)	Trailing	White	Ordinary	May to July
Leontopodium alpinum (Edelweiss)	Six inches	White	Chalk	May to July
Lewisia rediviva	Four inches	Rose	Rubble	June to July
Onosmas	Twelve inches	White, Yellow	Loam	May to July
Papaver alpinum	Six inches	Rose	Gritty	Summer
Phlox subulata	Trailing	White, Pink	Gritty	April to June
Phyteuma comosun	Three inches	Blue	Limestone	July
Polygonum vaccinifolium	Trailing	Pink	Gritty Loam	Autumn
Saxifraga (various)	Six to twelve inches	Pink, Yellow, White	Gritty Soil	Spring and Summer
Sedum (various)	Two to twelve inches	Yellow, White, Purple	Lime	June to August
Sempervivum arachnoideum	Three inches	Pink	Gritty Soil	Summer
Zauschneria californica	Twelve inches	Scarlet	Gritty Soil	August, September

Plants for the Shady Wall.

Name.	*Height.*	*Colours.*	*Soil.*	*Flowering Period.*
Arenaria balearica	Creeping	White	Clings to Wall Face	Summer
Asplenium ruta muraria (Fern)	Three inches	..	Mortar Rubble	..
A. Trichomanes (Fern)	Six inches	..	Mortar Rubble	..
Campanula caespitosa	Six inches	Blue	Ordinary	June and July
Linaria pilosa	Creeper	Violet	Gritty	May to July
Ramondias (various)	Six inches	Various	Peaty	June and July

QUICK RESULTS IN GROWING VEGETABLES

1.—Soil and Situation *versus* Quick Results in Growing Vegetables.

Much depends upon the situation of the piece of ground allotted to the kitchen garden, and in the nature of the soil, to obtain quick results from the growing of vegetables upon it. The choice of the right varieties—there are, for instance, sorts of the cabbage that mature in as many weeks as others take almost months to develop in!—naturally counts for a good deal: but it may be at once pointed out that unless the ground to be devoted to growing vegetables quickly gets a good amount of sunshine, i.e. for at least two thirds of the sunny hours of the day, and the soil itself is suitably prepared for each sort of vegetable, the results are bound to prove disappointing. Many vegetables will grow upon ground that is overshadowed, and does not get much sunshine, but, with the exception of some salad plants, they will not develop at all quickly, and their growth will be spindly and sappy, and not at all the sturdy kind of growth of the healthy, well-grown vegetable. In the matter of doing with only a little sunlight vegetables are far less accommodating than flowers, as a class.

It is well to emphasise this point, because it is quite a common practice for amateur gardeners who, in general, set greater store by the appearance of their flower, than of their kitchen, garden, to turn over the least favourably placed bit of ground to the production of vegetables under the mistaken belief that vegetables are, with but few exceptions, far hardier than flowering plants. And then they wonder why the growing of vegetables is such a bothersome and unsatisfactory business! Actually, among vegetables commonly grown out of doors there are about as many requiring special care and attention to bring them to maturity, especially to make them yield results quickly, as among flowers grown out of doors calling for similar consideration.

If the ground has a gradual slope towards the S., S.W., or

S.E., and is on a gravel sub-soil, the difficulties of getting quick results from the majority of hardy, and half-hardy vegetables, are not likely to be great unless during an exceptionally dry season. Natural protection from the trying winds of the N., N.E., or E., in the shape of rising ground, or thick hedges, fences or trees is always an advantage. Where it does not exist the gardener should take steps to provide it by erecting solid fencing, wattle hurdles, and even coarse sacking on frames for use during the earliest months of the year, and in late autumn seasons at which those unfavourable winds are most likely to make themselves felt.

For very exposed situations from which it is desired to get quick crops of salads, etc., early in the season, it is an excellent plan to shut off the blighting effects of the cold winds by erecting a double row of hurdles, at right angles (i.e. to shelter from the N. and E.), fixing the hurdles securely to stake three or four inches between the rows, this space being afterwards closely packed with straw or bracken. Light poles laid along the top of this packing material will prevent it from blowing about.

Early Crops Quickly Outdoors.

The ground space within such a specially protected angle will get all the advantages of the sunshine, without the retarding influences of the cold winds, and driving rains. The rain will fall on the ground there, naturally, but when blowing from the S. or W. it will not drive on with the force of rain carried on a fierce N. or Easterly gale from which there is no protection; and which, in the earliest months of the year—February, March, and April—can do considerable damage to the earliest crops of peas, broad beans, and lettuce, for instance, retarding their growth when not destroying them outright.

But it will be of little use taking steps to shield a bed, or piece of ground from the cold winds, and driving sleet, snow and rain of early spring, unless the land thus favourably exposed to the kindly Southern winds, and sunshine, is prepared with the utmost care for growing the crops that are to be sown, or planted, upon it.

Seed Sowing versus *Plants.*

The ground should have been twice deeply dug, at intervals of a week, or ten days, and well broken up the second time.

If it is very heavy mix a good proportion of silver sand or fine cinder ashes with it, also dig in some well-rotted manure (unless the crop is to be an early root one) and turn over another time. Unless the weather is very wet this will make all but the most unkind land, i.e. heavy, cold clays, friable to the rake, and fit for early seed-sowing, or the planting of young plants from the nursery.

This plan, will, in fact, accomplish, as far as may be possible for an operation necessarily hurried, the preparation of the soil by deep digging in winter, or autumn, ordinarily carried out in established gardens where the ground is allowed to lie rough dug all winter, and is again dug once or twice in spring to bring it to what is called, a fine tilth, that is to say, to make it light, and friable, and unlikely to clog around the bases of seedling plants, or set hard and caked over germinating seeds.

If the soil has been got into this light, rather sandy condition there will not be much to choose, really, for quickness of results, between the sowing of the seeds of crops that mature above ground, i.e. salads, early peas, and early cabbages as against the use of plants purchased from the nursery. The latter certainly save two or three weeks' time if one can be sure that they have been hardened off in a cold frame with the lights off on fine days. But if, as is frequently the case, the plants have come straight from frames over hotbeds, or from greenhouses, and they are planted out straight into the ground in late February or early March, they will most likely suffer severe check and, in the end, mature no quicker—possibly more slowly—than plants that have grown on steadily from seeds sown thinly, and covered carefully with a light, prepared compost of silver sand, loam, and leaf-mould.

For early crops under these conditions, always sow the seeds thinly, in drills ; but be sure not to bury the seeds too deeply. Roughly, seeds should be covered with about rather more than their bulk of fine soil. There is no choice between seeds and nursery plants in the case of crops maturing under ground, i.e. root crops, such as carrots and turnips. Root crops cannot be transplanted successfully, and must be sown thinly, where they are to grow and ripen.

Importance of Good Drainage.

The hurried preparation of a piece of ground as described above to prepare it for the production in early spring of crops that will be fit to use quickly, merely is one aspect of the importance of good drainage for all vegetable crops. If the garden is begun early in the year there will be time to give more thorough attention to the proper drainage of the ground which is necessary in the case of all but a few of those vegetables maturing in summer and autumn. But few crops indeed—to wit, watercress, celery, and mushrooms—will give a good return on really wet land. For the large majority the ground must be already light, or else it must be drained to make it light, and friable.

The condition of the surface two feet or so—it may be deeper or shallower—is governed by the type of the sub-soil, that is to say, before cultivation. A gravel and clay, or other clay mixture sub-soil, will have a heavier surface than one in which sand predominates. The latter will probably have a very light, sandy soil on top, good in wet seasons, but troublesome for most crops at other times until it has been altered by manuring, and other addition or else, it will be a good loam which is, briefly, a mixture of sand and clay, requiring only the presence of humus to render it ideal for the majority of the crops we are about to consider.

The Value of Humus.

Humus is important in many ways. It contains much food that is essential for plant growth, and it also assists the earth to retain that degree of moisture without which vegetable life becomes more or less impossible. It liberates stores of food from the mineral soil (the product, during countless years' subjection to weather, of the original rock) and produces heat by its chemical activity. Humus is added to the soil chiefly by means of farmyard manure, dead leaves, and decayed vegetable matter in general, and seaweed.

Heavy land is improved by the addition of ashes, sand, gritty road sweepings, lime, and old mortar ; and of course by cultivation, and a special system of drainage such as we shall presently consider. For, although an elaborate drainage system, such as is required for very heavy land, and land that may be water-logged in winter, may occupy some weeks of time which, to the amateur anxious to gather crops from his vegetable garden, would seem to be better used in sowing, or planting these crops after ordinary digging of the soil, the laying down of proper drainage will, in fact, save time in the end, by enabling the crops, or seeds, once planted to develop without hindrance, or check. Even light land will need preparation, though not in the direction of drainage. It will be improved by an admixture of clay, loam, and rotted manure to bring its extreme sandy lightness to the desirable loamy consistency.

Installing Drainage Where Needed.

A good indication as to whether or not the land requires a special drainage system to fit it for the production of crops of vegetables quickly is to dig a hole at a low-lying part of it to the depth of a couple of feet, and to see if water collects at the bottom and to what extent. Where this happens some system of drainage must be contrived before making any attempt to bring the surface into cultivation for vegetable crops.

The depth at which the drainage is formed will largely depend upon the customary water level of the ditch, or pond, into which the drains are to gradually slope. Where no such reservoir exists to receive the water drained from the land, the drainage system should converge towards the level of the lowest piece of ground, where a cask, or a hole, with a soakaway arranged at the bottom, may be made to dispose of the surplus water.

Tests, in the shape of sinking holes as described, may show drainage to be needed only over a small area of the ground set aside for kitchen garden, in which case the ordinary garden tools of full-size digging fork and spade, may be used.

But when the draining found to be necessary will extend over an area of several yards at least, the heavy work connected with the making of the trenches will be found to be a great deal easier if a long, narrow spade, or " sinking tool " is used for the digging, while a draining scoop is useful with which to hollow out the bottoms of the trenches, or drains. Unless the gardener is of fairly robust physique it will be easier, and quicker in the end, to employ a labourer to do this part of the work.

If there is to be a good slope to the drain, towards the point at which it is decided to drain off the superfluous water, work straight downwards towards that point with each of the trenches to hold the drains. But if the downward slope can be only a slight one, owing to the formation of the land, it will be advisable to use a straight-edge board, and a spirit level as the work proceeds, to make sure that the slope really is going on in a downward direction. The eye is an unsafe guide in slight divergencies of this kind. As a rule the drainage system should be about a couple of feet all the way beneath the level of the surface soil. This will give enough depth for the roots of most vegetables, and will also admit of ordinary digging being carried out without the possibility of damaging the drains.

Some idea of whether or not drainage is necessary on well-established lines for a piece of land will be gained from the fact that, on heavy lands, where it is indispensable to the success of the crops and their quick maturing, it is usually found that there may be a distance of as much as twenty feet between each drain. This is where proper drainage pipes, four-inch for the main drains, and two-inch for the branch pipes, are used with T-shaped junction pipes.

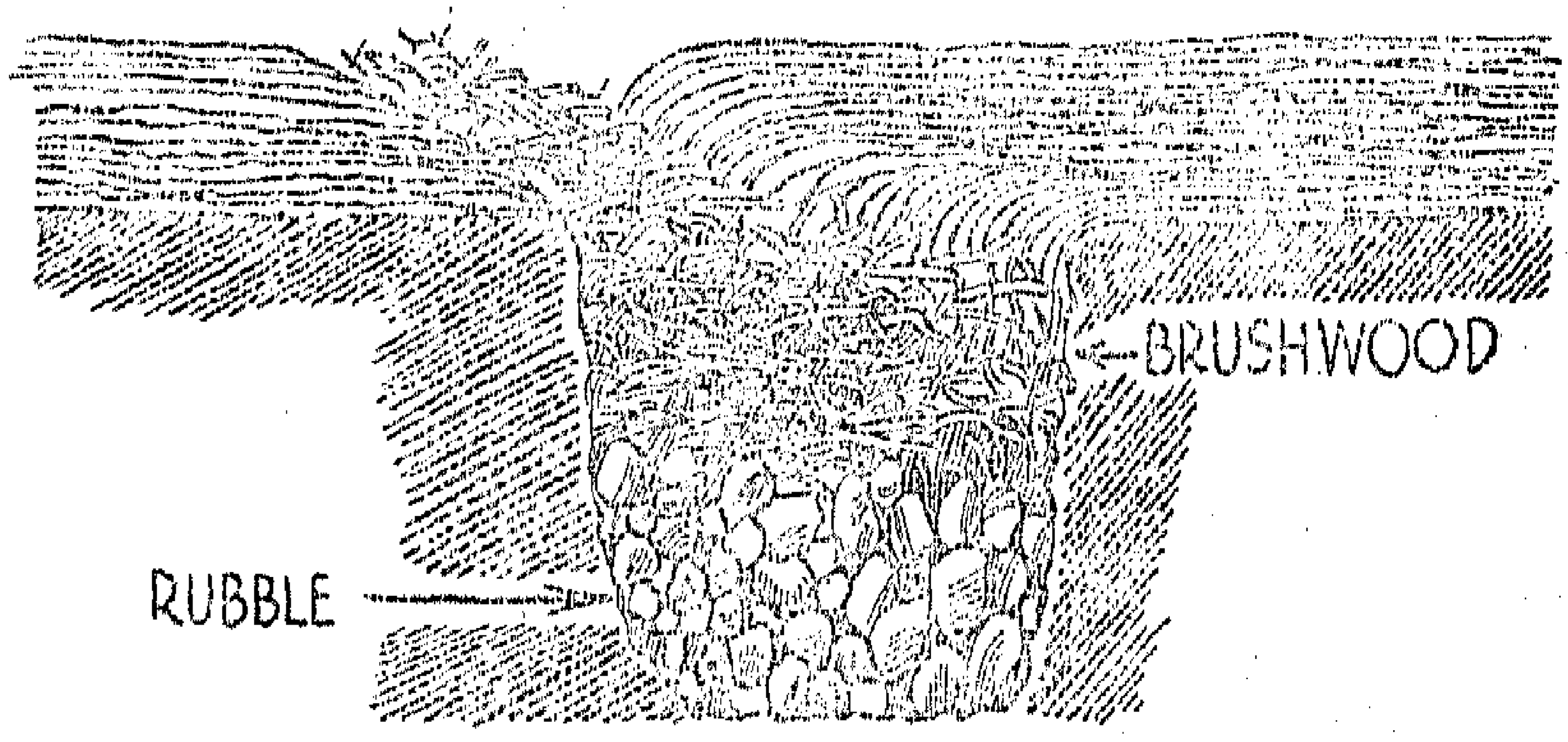

Fig. 5.—A Rubble and Brushwood Drain.

The diagram, Fig. 5, shows a simple type of drain that may be constructed with brushwood and rubble at the bottom of a trench, or trenches, converging to an outlet as for drain pipe systems. The brushwood (to layer) is covered by tiles before the soil is filled in. This sort of drainage must be just as deep as the pipe type beneath the surface for the same reasons of allowing enough space for root growth, and digging operations without injury to the drains.

2.—Preparing the Garden for Quickly-grown Vegetables.

Luckily for the average garden, anything in the nature of an elaborate drainage system is unnecessary, by the gardener intent upon getting vegetables quickly as a result of his labours.

For most soils, a good deep digging, or trenching, as explained in Foulsham's *Complete Guide to Gardening*, is usually all that will be wanted to bring the top spit, or the soil left roughly exposed to the action of the weather for as long as possible (up to the extent of a winter) into a suitable condition for sowing seeds, and planting young surface-growing vegetables from the nurseries.

If this preparatory work cannot be done much before February, when the earliest crops for quick results may be inserted, choose reasonably dry weather, and for preference, not frosty weather, for the first deep digging, turning over the whole area again a day or two later with a fork; and yet again, in another day or two if the soil is still sticky. But not, of course, if the weather should suddenly turn very rainy, or snowy, or frosty. These represent atmospheric conditions during the early months of the year when gardening operations, outdoors, must come to a standstill. When digging at all deeply it is important to remember that, where the sub-soil is of poor quality one must avoid going deep enough to turn it up, and thus put underneath the richer surface loam, which the roots of most vegetables would not go deep enough to obtain nourishment from.

The Right Kind of Digging.

A good, deep spade performs the right kind of digging on land that is not too wet, and sticky. On soil of this latter kind a digging fork will, however, prove the more useful tool.

Neither good root crops, nor good surface crops, especially green vegetables, will be grown from land that has been insufficiently dug; and by insufficiently is meant, land that has not been dug, and turned over as deeply as possible every six months or so at least. By " as deeply as possible " is meant, as deeply as may be without the risk of turning up poor quality soil.

In the cultivation of vegetables of all kinds, and particularly when quick results in cropping are wanted, the question of manures demands full attention. It is quite as possible for land to be too rich, as well as too poor, for the kind of crop that is to be grown upon it. Manuring that will grow fine, luxuriant, green crops will prove far too rich, and not at all the sort of food required for good root crops. There are a few vegetables, such as marrows, and tomatoes (it is debatable whether this is a fruit or a vegetable) that cannot be too richly fed while the crop is ripening.

Manures may be regarded as falling into the wide classification of animal, vegetable, and chemical. On new land, ground that has been old pasture, for instance, and that is therefore what is termed " virgin " land for gardening purposes, manures will not be required, probably, for the first two seasons. After that, and for gardens that have been cultivated, the addition of manures of some kind is necessary to replace the natural salts used up by the vegetables, fruit, and other plants that have been grown upon it since it was first broken to cultivation.

The roots of growing vegetables feed directly upon pure salts, and show a quick response to many kinds of chemical (artificial) manures. For this reason artificial manures are important factors in quick results in growing vegetables.

The Use of Chemical Manures.

The chemical (artificial) manures used must be varied as the plants will go on absorbing the salts they need whether or not they are artificially replaced. One class of chemical manure used time after time is thus apt to lose its power to yield highly satisfactory results such as it gave when first employed. But it should be remembered that this does not apply to dressings consisting of several chemical manures scientifically blended so as to form a more varied food supply.

The principal artificial manures are potassic, calcareous (limy), phosphatic, and nitrogenous, the last two being the most important for the particular purpose we have in view. Bones represent the original source of phosphoric acid in manures, but mineral phosphates have taken their place largely. One of the most useful of all phosphatic manures is basic slag which contains fifteen to twenty per cent. of phosphoric acid in the form of tetra-basic phosphate of lime, a compound that decomposes (assimilates) in the soil. Basic slag is applied in the form of a grey powder at the rate of about five cwts. per acre. It is readily obtainable at most nursery stores, and is particularly useful on clay lands, although it has a wide use in a general way. Potassic manures are not usually applied direct to the ground. Kainit, obtainable at most hardware stores, contains thirty per cent. of potassium sulphate, and is used as a dressing at the rate of two cwt. per acre.

Lime is one of the most useful of the calcareous manures. It is applied in the form of chalk, marl, hot or calcined lime, and shell sand. The action of lime is not very immediate upon the land, however, so that its main use, in sweetening old, and "sour" land (a garden that has been over-grown, never fed with manures, and rarely cultivated and dug properly) is most applicable when the tenancy of the garden is entered into during the winter months. Several weeks at least, preferably of rainy weather, must elapse between putting the lime on the land, and digging it in, and attempting to grow anything upon that particular piece of ground. As lime is present to a considerable extent in basic slag, these two artificial manures should not be used immediately after each other.

Most Useful Chemical Manure for Quick Results.

The nitrogenous manures are the most useful chemical manures for quick results in the cultivation of vegetables, of the sort ripening above ground. The most familiar kinds are sodium nitrate, ammonium sulphate, ammonium chloride, gas liquor, and Peruvian guano. Nitrates quickly wash through the soil and are thus best applied to the vegetables while they are in active growth. They give to the leaves of cabbages, etc., a rich, dark green tint, and promote leafy growth. But if the ground on which these "greens," as they are popularly termed, are growing has just previously carried a crop of peas, or beans (of leguminous plants) there is no special object in applying nitrogenous manures—in fact, rather the reverse—for these plants liberate nitrogen naturally at their roots which are thus best left in the ground to decay, and be dug in to supply nitrogenous manure naturally to the next ("green") crops.

These particular chemical manures—nitrate of soda, sulphate of ammonia—which most generally concern the owner of a smallish garden, as well as Peruvian guano, put up for sale, as a rule in canisters, are all obtainable at most nursery stores in moderate quantities, and possess the advantage of being handy, and clean to apply. But they should be looked upon as pick-me-ups and stimulants rather than as food supplies of lasting qualities. For this we must go to some form of

Animal and Vegetable Manures.

These consist, broadly speaking, of refuse materials of either

animal or vegetable origin. Among the animal manures are manures from the stable, cowshed, pig-sty, goat-house, poultry sheds, domestic pigeons and rabbits, as well as the guano sold in tins at the hardware and nursery stores, wool, hair, bones, blood, and the flesh of animals and fish. Thus, defunct pets buried in a garden really supply the soil at that part with several forms of natural salts which make most useful plant foods in course of time.

Vegetable manures come even more readily within the every-day by-products of the household. They include decayed vegetable substances, the result of piling annual weeds that have not reached the seeding stage, lawn clippings, leaves, burnt perennial and other weeds, garden rubbish such as the haulms and stumps of vegetables, into a heap, mixing some soil occasionally with the mass and turning it over periodically to assist the processes of decay.

No matter how small the garden or the household there is always refuse vegetable materials of some sort, and when collected and prepared as described they form a most useful manure for the garden that will assist, year by year, in the quick production of vegetables. Vegetable manure is particularly useful to dig in for root crops. Compared with animal manure (to which, in a general way, it is inferior as a food-stuff for plants) it has not the undesirable quality of making roots, such as carrots, parsnips and turnips, bolt, and become rank in growth above ground at the expense of quality of the root, which is naturally the part that we want to stimulate.

Applying Animal and Vegetable Manures.

Animal and vegetable manures (which includes leaf mould, a most valuable vegetable manure, to be prepared from dead leaves and soil, or may be bought at most corn chandlers') which are solid and bulky things to apply (unlike chemical manures), should be spread upon the ground, and then dug into it. If the ground is to be dug two or three times because it is extra hard, or wet, or weedy, i.e. has been full of twitch grass which must be eradicated, and burnt—the ash may be used as manure—then dig in the manure at the final digging. Never use fresh animal manure on ground where root crops are to be sown. It may be used, moderately, to the depth of about a couple of inches closely spread before the final digging.

Vegetable manure may be spread on much thicker, up to six inches or so; but from its very nature—unless in the case of leaf mould which is too scarce, generally, for prodigal use—it cannot be spread as closely as well-rotted animal manure so that the amount incorporated with the soil is not actually so much greater than with animal manure.

There is another form in which both animal and vegetable manures, and certain chemical manures (such as soot) may be applied in a handy form to growing crops, with much benefit to them when they are nearing perfection—and that is, as liquid manure, or manure water. This is made simply by placing a trowelful or two of rich manure in a two-gallon bucket of water, preferably soft water, allowing it to stand twenty-four hours, then applying it at half strength diluted with more water, to the roots of greens and other crops maturing above ground, once or twice a week—almost daily to marrows and tomatoes nearing perfection—afterwards well watering in with soft water from a fine hose.

Hand-lights and Clochés.

The use of glass hand-lights and clochés (the type of bell glass used in the French style of intensive market gardening) as well as of the modern, extending collapsible glass shields now obtainable from all the bigger nursery firms, is of much service for protecting the earliest crops of vegetables. By their use, too, one can maintain supplies of vegetables of the lower, small-growing kinds, in sunny positions outdoors during the winter months. Even 2-lb. size glass jam jars are not to be disdained as protectors of single, cabbage lettuce plants in winter; or of similar saladings. One mentions here clochés, etc., along with manures, chiefly because of the aids they are to quick results in growing vegetables. Their specific use in the cultivation of particular vegetables will be dealt with in due course along with the general information upon the growing of the plants concerned.

3.—Growing Potatoes and Beans Quickly.

For the raising of the very earliest crops of potatoes and broad beans, glass clochés, or (especially for the potatoes) collapsible glass shields, of the type to link up in continuous sections over rows of young plants, are a great help. They should be waterproof, and so made that there are no gaps in the sloping tops, or the upright sides. Spaces wider than a few millimetres of an inch, which cannot well be avoided at the juncture of one section with the next, will let in the frost, or the wet, in weather at all hard, and thus make these shields against the severity of the weather useless.

If the air within the shelter of the glass is damp mildew may spoil the young plants such as lettuce, or rot those nearing maturity. There is not much use, either, in going to the expense of these weather guards unless the part of the garden set aside for this special, early forcing outdoors of vegetables, is open to the full benefit of the sun. The young plants must have all the light possible; and there is the further point that the sun shining upon the glass raises the temperature within the cloché by some five to ten degrees Fahr., thus making it equal the normal outdoor temperature of late April or early May. Garden frames on hot-beds answer the purpose even better, for similar reasons. Here we are mainly concerned with obtaining quick cropping results outdoor from certain vegetables early in the year.

As most people know, the so-called potato "Seed" merely consists of tubers of moderate size that have been placed in shallow wooden trays under cover for about a month before they are to be planted. Exposure to light, at the temperature of about that of an ordinary living room (60 deg. Fahr.) causes young leaves to sprout from the eyes of the tubers, the "eyes" being tiny leaf buds, and if the tuber is most carefully planted so as to avoid damage to the tender green shoot thus formed, leaving the tip of it just level with the surface soil, the young potato plant will start into growth almost at once. Much time is thus saved.

Forcing Early Potatoes.

Unless the garden soil is naturally light, it will require to have a good proportion of silver sand mixed with the surface, inch or two along the rows where the glass protectors are to stand. The ideal soil conditions for potatoes are: a well-drained soil, mellow and rather rich, but crumbly in tilth, or consistency. If this is found to be difficult to manage for early forcing, on heavy soils, silver sand, and some leaf-mould can be freely used to form pockets of light soil into which each of the sprouting tubers can be planted. Apply also a little dry soot at planting time, for under the protection of the glass, slugs (which like shelter of the kind just as much as tender, early vegetables) will snip off the sprouting shoots and throw back growth definitely for a month.

In forcing potatoes for an early crop it is no use expecting results unless a suitable variety, of the Early, quick-maturing sorts is chosen. The mid-season and late (main crop) varieties are slower, sometimes much slower, in developing even when planted at their proper season, April and May respectively, and it is sheer waste of time to try to hurry them on by the intensive methods described.

Good Early sorts for forcing are :—Eclipse, Sharpe's Express, Sutton's May Queen, Sutton's Donottar Castle, Sutton's Epicure, Arran Crest (perhaps the earliest to mature of all), Midlothian Early, Witch Hill Early. It should be noted that most Early varieties of the potato, including those here specially named because of their suitability for forcing work, in frames, or under glass protectors, are quite useless for keeping for winter use and only enough should be planted, therefore, to meet the requirements of the household in home-grown potatoes, until the mid-season, and late varieties come into use. When planted carefully as advised, and the foliage shielded from frosts, these Early kinds may be expected to be ready for use in May if the sprouted seed, or " sets " are planted early in February, choosing a favourable spell of weather for the work. Should the weather then be snowy and inclement, it will save time in the end to delay planting until conditions improve.

Ordinary Cultivation of Potatoes.

Sixteen inches from tuber to tuber will be enough space to allow in the case of early varieties under forcing conditions, for they do not make the same root growth, nor are they, as a rule, allowed to reach the complete maturity of the later sorts. They pay better to grow, however, for it is the " new " potatoes early in the year that are by far the more expensive to buy.

Good Early sorts planted on light, well-cultivated land in favourable weather in February will often yield tubers of respectable size for use from late May until the beginning of June. It will be necessary, however, to afford the first leaves some protection from frosts although they will not push so quickly above ground as those under glass shields, or in frames.

The best way to manage this is to earth up the soil, that is to say, to draw it up around the rosette of leaves appearing, with a hoe or spade. If the soil is in a heavy, sticky condition, mix up a light compost with silver sand, and use two or three handfuls of this around each young plant, forming a little mound to protect from the frost.

As the leaves grow upwards, and the haulm begins to show, place short, twiggy pea-sticks along both sides of the row, to keep in position some clean, dry straw loosely twisted around each plant. This is all we need trouble about specially in the cultivation outdoors, under ordinary conditions, of Earlies.

Later Varieties of Potato.

Those who like " new " potatoes in the autumn, by the way, can easily obtain them by planting one of the sorts named above, but especially either Eclipse, or Arran Crest, about the beginning of July.

Besides the Earlies, there is a second class of potato, termed Second Early which, if planted outdoors in April will be fit to harvest, with ordinary care and attention, i.e. without being shielded specially from late frosts, in July, August and September. They comprise a very useful section, and some of them keep well.

They should be planted about eighteen inches apart in the rows, with a distance of twenty-four inches between the rows. Earth them up as soon as the leaves are well above ground. Do this with all varieties of potatoes grown outdoors under ordinary conditions. Not only does it help on the growth, in the early stages of development, but when the tubers begin to swell, and the bunch at the roots is at all large, those on the top will rise through the soil surface, and become greened, and spoilt in flavour, unless earthing up has been properly attended to. Often several earthings are necessary between the first, given when the leaves first show, until the time when the plant begins to flower and the bunch of tubers may be expected (by this sign) to be well advanced in growth.

Good Second Early (or mid-season) varieties are :—Arran Banner, Arran Comrade, Catriona, Great Scot, King Edward, British Queen, Sutton's Ben Lomond.

The cultivation of the Main Crop and late sorts generally is on similar lines to the Second Earlies, but as they form very large roots they should be given quite twenty-eight inches between the rows. Planted in March to early June they are not ready to harvest until September, for the quickest-growing; and well on in October for the majority; but as some of those late maturing sorts succeed quite well planted in June, unless the season is an exceptionally dry one, and give large roots of large tubers some five months later, to store for winter, and early spring use, they are well worth growing. Good Main Crop varieties are:—Up-to-date, Golden Wonder, Arran Consul, The Bishop, Kerr's Pink, Incomer.

Speeding-up Ordinary Potato Crops.

Earthing up, or hoeing, as has been said, helps greatly towards a quicker development of root growth—the important part—of the potato plant. From the second hoeing onwards, at each later one, it is a good plan to hoe into the soil around the roots, a little of some good potato fertilizer, according to makers' directions for use; or else a little of a mixture of three parts of superphosphate of lime, one of kainit, and one of nitrate of soda. This should not be used until the potato plants are in active growth.

When lifting potatoes, use a rather broad digging fork that will take the whole root up without leaving any small tubers in the ground to cause annoyance some months later by sending up potatoes where potatoes are no longer desired to grow. To avoid this, as far as possible, turn the soil over two or three times after each root is lifted, and comb out in this way, all loose tubers, whatever their size. Tiny tubers will grow the following season just as readily as fair-sized ones when left behind in the ground in this way. Greens, or saladings of some sort, or even dwarf peas, should be grown between the rows of potatoes after their first earthing up to avoid wasting garden space. These crops, too, will benefit by the protection from cold winds afforded them by the growing potatoes, and the ridges of earth.

Growing Beans Quickly.

When the occupancy of the garden is entered into in late autumn, a sowing of one of the hardy Longpod varieties of Broad Beans may be made in a sunny, sheltered position to supply some of this succulent legume about the following April, forestalling the main supplies of Longpod and Windsor which are sown in February and March to harvest in May and June. Bunyard's Exhibition Longpod, Improved Green Longpod, and Early Longpod are all suitable for sowing in October or November to stand the winter as young plants. For spring sowings choose one of the Windsor varieties, such as Green Windsor, Taylor's Broad Windsor, or Dobbie's Selected Broad Windsor. With these spring sowings it is a good plan to sow some for succession a month after the first sowing—about the first week in February, and the first week in March if soil is reasonably light, and the weather open.

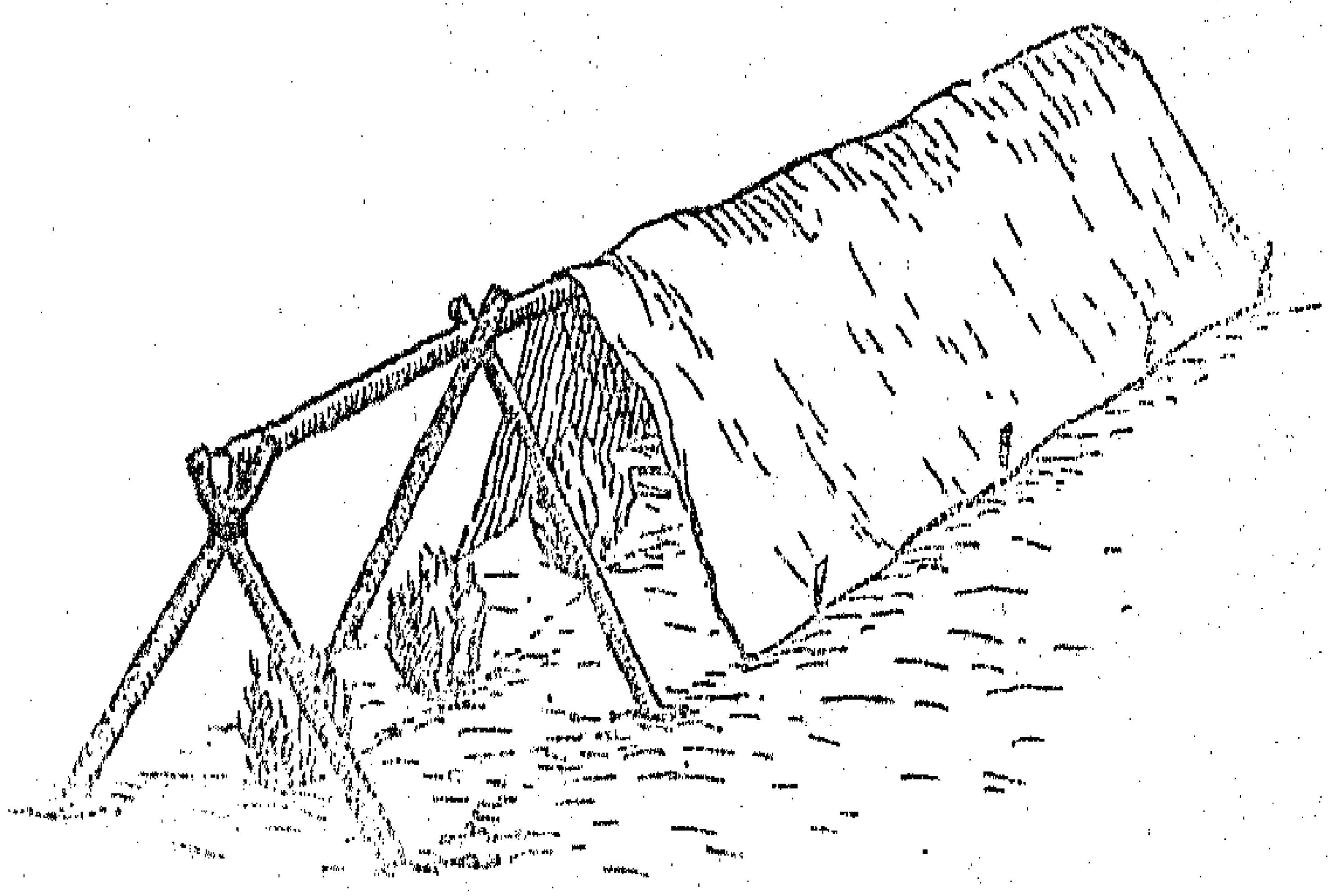

Fig. 6.—A Simple Way to Protect Plants from Frost.

Beans do best in a light, warm, deeply-dug soil, that has had well-rotted stable manure worked into it thoroughly. When the tilth is loose and fine they may be sown quickly by stretching a garden line tightly in the position the row is to occupy, and then pressing the beans into the soil, to a depth of about two inches, singly, and then covering with soil, some nine inches apart. The space between need not be wasted, of course, as it can be utilised later in the spring for saladings, or other low-growing subjects.

It is a good plan to protect young, autumn sown broad beans against the severity of winter by arranging screens of low pea sticks and straw as advised for earliest potatoes; or else by using wind-screens or glass protectors. The latter, and clochés, however, can only be used for spring sown broad beans, during the earliest stages, as the plants soon grow much too tall for the protectors. Moreover, insects must get to the blossom to fertilise it, or there will be no beans to gather!

Earthing up helps on the growth, and a slight mulching of rotted manure conserves moisture around the roots during dry weather. Weak liquid (preferably animal) manure before watering, or a shower, will swell the beans in the pods quickly as soon as they are formed. The shoots should be pinched out and, if affected by fly, cut back.

Such, then, are the usual outdoor methods for the cultivation of Broad Beans. But, while this plant cannot be regarded, by any means, as a delicate subject in this country, it is one that responds to forcing during the earliest stages of growth. By this means the flowering period of growth may be hurried forward by a month for spring-grown plants, unless the spring is an unusually bleak and inclement one.

No seeds germinate more readily than beans. A greenhouse or a frame over a hot-bed presents the best means of bringing them on fit to transplant outdoors under glass protectors in two to four weeks after sowing, although there is no need to miss giving them a quick start should these aids to forcing not be available. If the pot, box, or seed-pan (a pot or seed-pan is best) containing the seeds, planted quite thickly in a light, sandy compost, is placed in the sunny window of a warm room in the house, the young beans will soon push their way upwards to light and air. Turn the pot daily to avoid drawing them up into weakly specimens, and transplant them outdoors as soon as they are two to three inches high. Make holes with a trowel for the reception of the roots, and be sure to keep the compost well about them, and do not injure the fine rootlets. Water in, and keep fairly moist until established.

If this is done quite early in the year—February, or early in March, the young plants will naturally require the protection of glass of some kind as already indicated at first. But by the latter part of March such seedlings may be transplanted outdoors in favourable weather with complete success provided they have been hardened off for a day or two by placing the pot, etc., outdoors during the daytime. Do not, of course, transplant outdoors from heat in frosty weather.

Forcing French Beans.

When a nice crop of pods have become set on each beanstalk, the leafy tops of the plants should be pinched out, as it is in these that the particular insect pest of the bean, black fly, establishes itself to the danger of the general vigour of the

plant if not immediately destroyed. Spraying is of little avail, unlike the green aphis which more largely infests plants of other types.

The dwarf haricot, or French beans, are the most suitable of this class for forcing under glass protectors or clochés, early in the year. They should be planted in single rows, ten to twelve inches from plant to plant, and can be brought on, as advised for extra early broad beans, indoors, either in the house, greenhouse, or frame. March will be early enough to sow the seeds, rather less thickly—an inch apart in the pots or seed-pans—than broad beans, in a light, rich compost. Keep close to the light or glass to avoid weak, weedy " drawn " growth, and plant out under the glass shields (continuous pattern) when a couple of inches high. Clochés and shields can be got high enough to accommodate the plants until in full bearing condition, in May, when, of course, there is no longer need for protection, and the long, juicy pods can be gathered for the table quite a month earlier than would have been the case under the most favourable conditions of ordinary outdoor culture.

Apply weak liquid manure, well watering in afterwards, twice weekly after the pods have begun to set. And, before this, as soon as blossoms appear (if there is still a danger of night frosts) be sure to remove a section here and there of the glass, or take off all clochés, on dry days to allow insects free access to the flowers for fertilization purposes.

When the season is a mild one and one is sure there is no risk of dangers from night frosts, the glass protection may be done away with entirely, and the plants will benefit by the air and unimpeded sunlight. Runner beans may be brought on, in their earlier stages, in just the same way as French beans, but the seeds should not be planted indoors until the beginning of April or the young plants, transferred to the protection of the glass shields, will be too tall to remain there before the shields can be removed—in mid-May at the earliest—with all risk of frost over, to admit of the beans being staked out about a foot apart.

The details of cultivation are practically the same, with the exception of staking, as for the dwarf French beans. The hardier sorts of dwarf French, or Kidney Beans may be sown outdoors, without need of glass protection by mid-April; and of runner beans a month later. The growth of both sorts can be hurried on by sowing the seeds indoors, and allowing for two to three weeks to elapse before it will be safe to transplant outdoors (after hardening, as advised for seedling broad beans) in their permanent quarters.

Good sorts of Dwarf, or Kidney Beans for forcing are:—Earliest of All, Feltham Prolific, Masterpiece, and for sowing directly out of doors at a later date: Bounteous, Everbearing, Golden Butter, Ne Plus Ultra, Canadian Wonder.

Good sorts of Runner Beans for forcing are:—Giant White, Titan, The Marvel; and for sowing directly into the ground, out of doors: Scarlet Runner, Painted Lady, Ne Plus Ultra.

4.—Green Peas, Radish and Lettuce, from Spring to Autumn.

Few vegetables are more delicious than tender, new green peas, yet, as we remarked in the Preface, the vegetable is one which it is not easy to get quite fresh in the shops. There is an appreciable difference in the flavour, and easy digestibility of fresh green peas from one's own garden, frame, or greenhouse, and the peas hulled from the generally withered-looking and battered pods of the "green peas" offered at most shops not directly in touch with Covent Garden, or a local market garden. Good green peas are, like good "new" potatoes, somewhat dear to buy in any quantity as a vegetable, so that all who can spare a part of their garden for the cultivation of this vegetable will find it pays well to grow, apart from the superiority of the home-grown, as against the average shop sample.

By careful management, and the use of glass shields along the rows for the earliest crops, it is quite possible to maintain a supply of green peas for the table from April until the end of October, or even early November, by making successive sowings of the right varieties for the purpose, as presently to be named.

Peas grow best in a good, and not too light soil that has not been immediately manured. Preferably, on ground that has carried a root crop the previous year. Unless the ground is very rich, a dressing of some phosphatic manure when growth is well advanced, will hurry forward the prolific production of pods, if the variety is a good one. The edible pea has been so much improved by careful crossing, and selective "breeding" for special utility qualities that one must emphasise the need for careful selection of the right varieties for the purpose in view. The catalogue of any reliable seed firm will give full details of the qualities of the sorts offered, but for general guidance we give a selection of those that will be found to give satisfaction for quick bearing results.

Dwarf Varieties for Earliest and Latest Crops.

The soil for peas must be loose, and well dug, and broken whatever its composition; and it must be kept well forked, and loose, for they will not do well in ground which becomes caked, and hard, whether in spring, summer, or autumn.

For the earliest and the latest crops, good dwarf varieties should be chosen, growing no higher than a foot. Not only do many of the best modern strains of dwarf pea mature quickly, but obviously they are the only sorts which can be grown under glass shields from start to finish, sections of the glass being opened along the rows on fine days to admit flying insects for fertilization.

It is true, of course, that the best sorts of tall growing peas bear many more pods per plant, because of the great length of stem, than the dwarf kinds; but there are now varieties of the latter which bear pods in small bunches thus yielding remarkably heavy crops without shutting out the light from other crops around them as tall growing peas are so apt to do.

Apart, therefore, from their undoubted suitability for the earliest and latest supplies, for obvious reasons, dwarf varieties are the best beyond doubt, for small gardens where tall-growing crops requiring a couple of feet or so between the rows (even when use is made of the space between for saladings) are difficult to manage.

For the earliest crop of dwarf sorts to be brought on under glass protectors continuous over the rows, the peas should be sown about twelve seeds in each five-inch pot in December or January. A stockier, more bushy habit of growth will result if the tops are pinched out of the seedlings after the second leaf is unfolded. The young plants must be grown on under cover, in a sunny window of a warm room will do if no frame or greenhouse is available. In frame or greenhouse place close to the glass to prevent weak, drawn growth.

Harden off, as already advised for beans, and transplant the seedlings outdoors in a nicely prepared strip of ground about six inches apart, so that they grow in a line down the middle of the soil beneath the range of continuous glass protectors or cloches. Choose a fine day in February—of which there are generally several—for the job. As the little plants grow place short, twiggy pea sticks along each side of the row.

Although dwarf peas do not require staking, strictly speaking, and have been introduced largely with the object of doing away with the need for the bothersome business of staking tall-growing peas, there remains the fact that the little bushy dwarf peas make better headway early in the season when given the support of short pea sticks. There is the advantage, too, that the sticks keep the haulms clear of the earth which is sometimes rather moist to be healthy for the tender plants (for peas are susceptible to frosts) at that season of the year.

Sowing Peas Outdoors for Quick Results.

If the weather is mild a sowing of a good dwarf variety of pea can be made out of doors soon after the first lot of seedlings are established beneath their protection of glass. These peas should be sown singly, in drills some eighteen inches apart, with a space of a couple of inches between each seed. Before planting rub the seeds in red lead as a protection against mice. Both mice and sparrows, especially the latter, are destructive towards sprouting peas.

Pea stick or twigs, or, better still, the wire netting pea guards sold at most ironmongers' stores nowadays in yard lengths for continuous fixing—should be placed over the drills until the young plants are well up. If the wire guards are used to protect the seedlings it is advisable to remove them before the tendrils of the plants begin to twine around the netting. If short pea sticks, or pieces of twig have been used, they need not be removed. Indeed, they will help on the young plants to make a firm start if left in position.

Tall-growing, Later Varieties of Peas.

The tall-growing varieties may be sown outdoors in the same way as the dwarf; or, what is a better plan, shutting out the light less from the peas themselves, and from the crops near them, the sowings may be made in the form of a double drill, with the tall pea sticks inserted between the drills (which are some six inches from each other) so that the growing plants climb up each side of the hedge thus formed. Short pea sticks, to start off growth, should be stuck into the ground on the outer sides of each drill, not only to give the seedlings a good start, but to protect them from the mice and birds. Pea guards (wire netting) may be used in place of, or as well as, these short twigs until the young peas are two or three inches high, and therefore too robust for the onslaughts of their enemies.

Early peas, both tall and dwarf, sown out of doors in November, or February and March, receive some protection from severe weather if lightly earthed up. Some fine wood ashes mixed with the soil thus drawn up about the young plants are of service and later on, like those under cover, they should have feeds of weak liquid manure as soon as the pods are well set.

Sow First-Early Peas in February and March to gather in May and June. Sow Early varieties in February and March to be ready in June. Sow Second-Early varieties in March to be ready in June and July. Sow Main Crop varieties in April and May to be ready in July, August and September. Sow Early varieties again in June to gather in September and October, choosing a very dwarf kind that can be ripened under glass shields.

Good Varieties of Peas for Quick Results.

Keeping in agreement with the above classification of varieties for successional cropping, the following are kinds that can be recommended to give quick results when carefully grown as described.

First Earlies—Dobbie's English Wonder, American Wonder, Chelsea Gem. *Early*—Dobbie's Express, Gradus, Hundredfold, Laxtonian, Laxton's Progress, Laxton's Super. *Second Earlies*—Admiral Beatty, Duke of Albany, Duplex, President, Prince of Wales, Senator, The Daisy. *Main Crop*—Dobbie's Alderman, Autocrat, Hurst's Monster, Quite Content, Royal Salute, Dwarf Melting Sugar Pea, a variety in which the pods, as well as the peas (like French beans) are edible.

Lettuce Quickly All The Year Round.

By the choice of the right varieties, sown at intervals and managed on the broad lines of a fairly light, but rich compost, a sheltered, fairly sunny position, and freedom from drought and weeds, it is quite possible to have supplies of lettuce all the year round outdoors without the use of glass. But it must be conceded that the hardiest sorts of lettuce which have been produced to stand the winter in sheltered, sunny places, have generally deep reddish, or brownish outer leaves, and are not of the delicious, delicate flavour of the usual warm weather varieties when grown under the protection of glass—heat is not necessary, just protection from frost, and plenty of light—in winter. Therefore, if you desire green-leaved, tender lettuce in winter, as in warm weather, be prepared to use frames, or else clochés or glass shields of the usual continuous types.

There are two distinct sorts of Lettuce, the Cos, or tall growing, and the French, or Cabbage which, as its name indicates, is of squat, ball-like shape. Both kinds will respond to forcing under glass in winter, but a higher shield is necessary for the Cos; and, all considered, the Cabbage will be found, in most cases, the best sort to grow intensively. While it is true that plenty of air is necessary for lettuce grown under glass in winter, to avoid the mildew and damping-off so apt to occur because the plants need a fairly moist soil compost about them to keep the leaf quality tender and sweet, frost will at once cause these tender, warm-weather varieties to wilt, and become soft and nasty in the outer leaves if it does not destroy them utterly.

To guard against the possible injurious effects of frost, therefore, dry sacks should be thrown over the frame or clochés, every night during winter, removing them indoors for the day (unless on severe, sunless days) to any airy outhouse where any moisture may dry off before night. To put damp, or wet sacks on will merely aggravate the possible danger from frost, because the sacks will then freeze, lowering the temperature within the frame, etc., instead of insulating it against freezing point.

Lettuce Under Glass in Winter.

Lettuce seed requires a certain amount of heat to germinate, a night temperature of 55 to 60 degrees Fahr. If a hot bed and frame, or greenhouse, is not available, therefore, for the boxes of light, sandy compost in which the seeds have been sown thinly, and covered with a slight sprinkling of soil, the best plan will be to germinate the seed in these boxes placed out of doors late in October with a sheet of glass covering each box. This will conserve both heat and moisture.

When the seedlings are big enough to pick out, thin them, transplanting the thinnings into other boxes in which the soil is quite an inch from the top of the box, which is covered with a sheet of glass. The little plants should make good progress there, and will be large enough to transplant to their final quarters under the glass protection, or in the cold frame, allowing eight inches to a foot from plant to plant. Sufficient must be raised to fulfil culinary needs until the following March, as successional sowings cannot be depended upon without the aid of heat for germination. The most suitable compost for their final growth under glass is a good, rich loam, fairly light (sandy) in consistency.

Another advantage of the cabbage type of lettuce for this intensive cultivation, is that, after the final transplanting under glass, no more attention is needed beyond keeping the soil loose, and moist about the roots; whereas, in the Cos varieties each plant must be tied round, when half grown, with raffia grass, to encourage the plants to form tightly-packed, crisp hearts. Self-folding Cos Lettuce have been produced, however, recently, which to a considerable extent, save this extra work.

Outdoor Cultivation of Lettuce.

The hardy winter sorts which are to maintain a supply of lettuce outdoors without the protection of glass, should be sown in boxes as described, or else in shallow drills in a sunny position in August, thinned out and transplanted into their final positions in September, to be well established in roothold before the first frosts.

It is no use expecting lettuce seed of the warm weather varieties to germinate outdoors until March, at the earliest; and then only if the weather is sunny and mild, as it often is about the beginning or middle of that month. Prepare the soil by digging and raking, to a fine tilth, and make quite shallow drills in which the seed should be scattered fairly thickly for the first sowing. The young plants can be readily thinned out and transplanted should they come up too thickly.

Make further sowings thereafter every ten days or so until the beginning of August, to maintain supplies of tender leaves for salads. Use a hand fork, or rake, freely between the growing lettuce plants to keep the soil open and friable, and never allow them to suffer from lack of water. Insufficient moisture, and a hard, caked soil, is responsible for plants bolting to seed, and bitter-tasting leaves. Like most saladings, lettuce must be kept growing quickly and steadily to be of the finest flavour.

Quick-growing Varieties of Lettuce.

Cabbage varieties for forcing—Early Paris Market, Tom Thumb, Sutton's Golden Ball. *Cos for forcing*—Paris White. *Cabbage for autumn sowing outdoors*, to use in winter, and early spring—Sutton Imperial, Arctic, Early Spring, Spring Beauty, Hammersmith Hardy Green, Stanstead Park, Dobbie's Hercules, All the Year Round. *Cos varieties for autumn use*—Sutton's White Heart, self-folding, Sutton's Little Gem, Black-Seeded Bath, Sutton's Winter White, Hick's Hardy White. *Cabbage varieties for general spring and summer sowing*—Matchless, Standwell, Commodore Nutt, Heartwell, Supreme, Drumhead, Dobbie's Exhibition, Ben Lomond, Continuity, Neapolitan, Wonderful. *Cos varieties for general spring and summer sowing*—Peerless, Nonsuch, White Cos, Alexandra White, Giant White, Lobjott's Green.

It may be noted that the varieties specially raised for sowing in autumn to stand the winter outdoors will prove satisfactory enough for ordinary sowings in spring and summer although, as already indicated, their leaves are in general of a coarser texture, and inferior in delicacy of flavour to the best summer sorts.

Radishes Quickly in Winter and Summer.

Radishes must be grown on very quickly to be delicate in flavour, and free from stringiness in flesh. They should be ready to use when the fourth rough leaf has been developed. A rich, but not freshly manured soil suits them, and it must be perfectly loose and friable when the seeds are sown. The seedlings must never be allowed to suffer from drought, or hard, caked surface soil.

Radish seed is generally sown broadcast, raked in, and covered over further with a sprinkling of a light, rich compost. If the seedlings come up thickly they must be at once thinned out to roughly three inches apart.

As regards forcing in winter, much the same remarks apply here as with lettuce. But radishes, being a root crop, must be sown where they are to grow and mature, for transplanted root crops at once bolt to the flowering and seeding stages of development. There are radishes that will stand winter outdoors sown in sunny positions. For growing under glass (clochés or frames) any of the warm weather sorts will do, but preferably choose a turnip-rooted variety. Dot the seeds three or four inches apart each way in specially prepared, rich, loose compost under the area of the glass. By "dotting" the seeds is meant planting them, singly, one by one, instead of sowing broadcast, or in drills. The plan occupies more time, but it ensures larger, finer plants which need not be thinned out at all.

Varieties of Radish for Constant Supplies.

There are, as most people know, white and scarlet (or more accurately, rose-pink) skinned varieties; and there are also the small, round, turnip-rooted, and the long-rooted sorts. There is also a very dark coloured type, the Black Spanish, and Russian radish, long rooted, and excellent to withstand severe weather in winter, for maintaining supplies out of doors then.

To force under glass any of the following may be used:—Earliest Scarlet Forcing, Earliest White Forcing, French Breakfast, scarlet, tipped white, Giant Forcing, to sow in summer outdoors; as well as the foregoing:—Beck's Scarlet, Icicle, Olive-shaped Scarlet, Olive-shaped White, White Turnip, Red Turnip.

5.—Turnips, Parsnips, Carrots and Beetroots.

After radishes, the quickest maturing root crop in the garden is the turnip of the white stone type, which matures in six weeks from time of sowing under favourable conditions. There is little need to bother about sowing turnips late in autumn to grow on under glass protection for winter use. The green-topped white type will stand a fair amount of severe weather in winter if sown outdoors in July and August; while apart from that source of supply there are the yellow-flesh summer turnips, and the garden Swede turnips which, although maturing while the warm weather lasts may be grown in sufficient quantity to store in a frost-proof outhouse in damp sand for use throughout the winter. Where growing space is at a premium there is no need, therefore, to bother about winter-growing turnips (or carrots, for that matter, unless baby carrots for salads and Hors d'œuvres are required) or grow more than one good crop of a summer-growing, winter-keeping sort, with two or three small sowings of the quick maturing, white stone types.

As a general rule the best plan is to sow turnip seeds of all kinds in shallow drills, as thinly as possible. But it is not wise to " dot " turnip seeds with the object of saving time thinning the seedling plants later on, because turnip seed is very variable in percentage of fertility, and where it is dotted the chances are all against each of the separately planted seeds coming up, causing unsightly gaps, and waste of space, for these deficiencies cannot be made good in a row of turnips (or other root crops) as may be done easily with surface maturing (greens) crops.

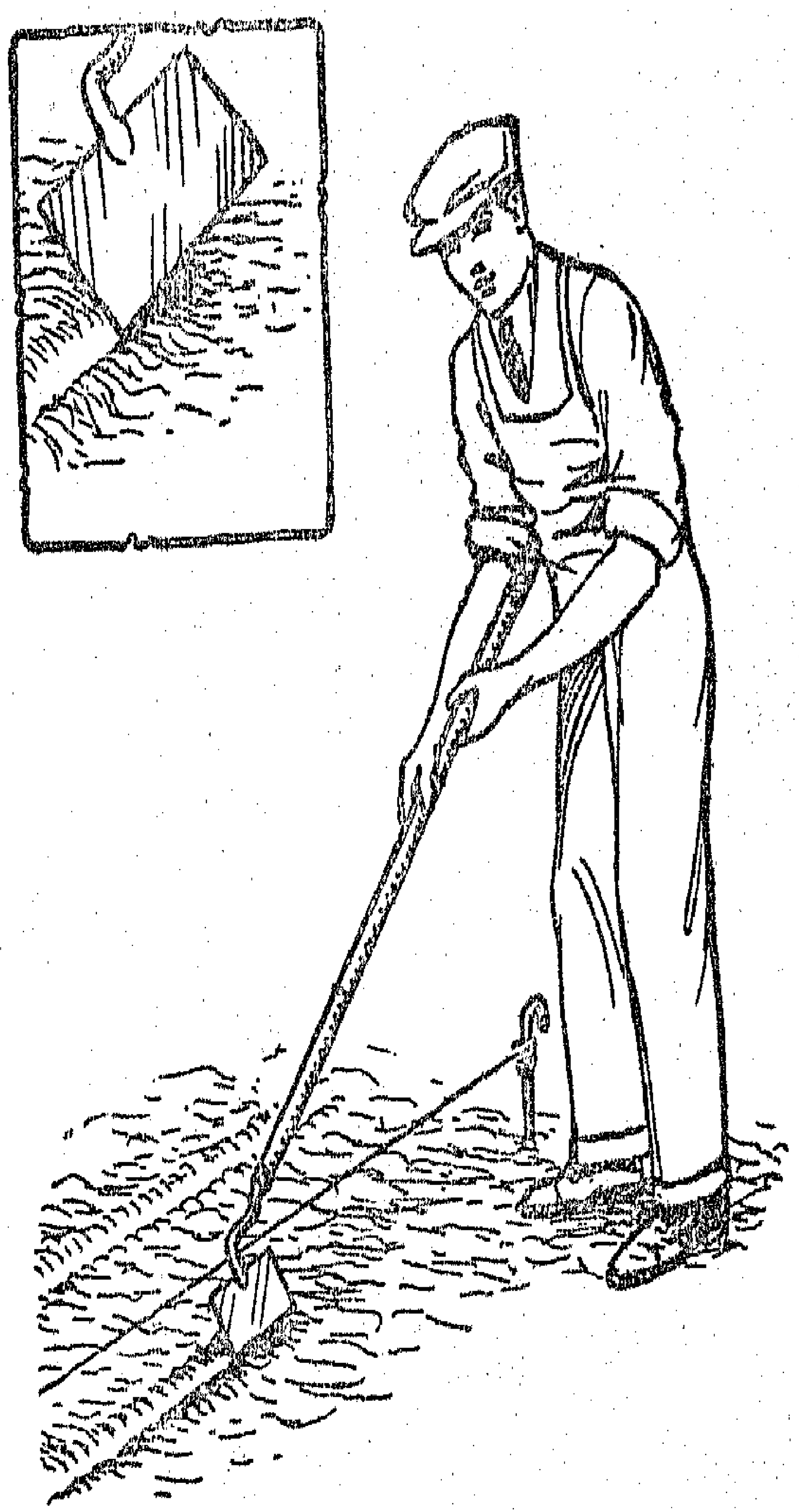

Fig. 7.—Making a Drill.

All the same, avoid sowing turnips of all kinds at all thickly as the seedlings will become weakly, and twisted in root while still almost too small to thin out widely enough apart to admit of full root development. A distance of four inches from root to root in the smaller white and yellow kinds, and a foot in the case of Swedes, will be found to give good results. One of the commonest mistakes of the amateur is to sow, and attempt to grow, his turnips, carrots and beetroots far too thickly, under the quite mistaken notion that he will thereby get bigger crops. He will certainly get a larger number of roots, but the chances are all against them being of useable size, and weight for weight on the totals lifted, the yield will be very much poorer than where the seedlings have been thinned out rigorously.

The accompanying illustration shows how to make, or " take out," as it is termed, a drill in the ground in which turnip and other vegetable seeds are sown :—

After forming the drill, or shallow furrow, if the weather is dry, and looks like remaining so, it is an excellent plan to water well and carefully with soft water from a watering can with the rose removed, so that the water comes out in a single stream which should be guided along the bottom of the drill. The seeds may be sown soon after, then fine, dryish surface soil carefully filled in. Broadly speaking, seeds should be covered with about twice their depth of soil. There is nothing to be alarmed at in the roots pushing out above the soil as they approach maturity. This happens as a rule, and the roots are not spoilt (as potatoes are) for use because of it. Turnips like a rich, but not freshly-manured soil.

Turnips for Forcing, and Winter Use.

The quick-maturing sorts of turnip for successional use in summer may be sown outdoors from March until August, Swedes may be sown in May for winter use (i.e., stored) and the yellow-fleshed sorts in March and April for summer, autumn and winter use—the latter when stored in damp sand. The green-topped white should be sown (as already remarked) in July and August where turnips fresh from the ground are wanted for winter use.

The following varieties can be recommended :—*White Stone* (maturing in about six weeks from time of sowing)—Dobbie's Model White, Early White Dutch, Extra Early Milan, Snowball, Cattell's Silver Ball White Stone ; *Yellow-fleshed* (summer)—Golden Ball, Red Globe ; *Swedes*—Garden Swede, Lang's Swede, Sutton's Bronze-top.

Turnips suffer from an insidious pest that, on some situations, seems to almost prevent their cultivation, unless constantly and rigorously dealt with. This is the turnip fly which attacks the young plants and riddles the leaves with tiny holes, quite spoiling development if it is not destroyed. Water the plants from the fine rose of a watering can with a strong solution of soft soap and soft water, prepared hot, but, of course, not poured over the plants until quite cold. Successive applications for two or three days may prove necessary.

Parsnips.

Parsnips are a root crop that cannot well be hurried, and their development is slow, for, though sown in February and March out of doors they are not fully grown, as a rule, until late autumn or winter. If it is desired to grow parsnips they will succeed very well managed on similar lines to carrots than which, however, they require a richer soil, responding to well-rotted manure, laid along the bottom of a trench specially prepared for the sowing of the seeds.

Forcing, and Ordinary Cultivation of Carrots.

The carrot responds well to cultivation under glass, over a hot-bed under frame, or glass shields, for the supplies of tender, baby carrots in winter. Large carrots lifted in autumn will keep perfectly fresh for use all winter if stored in damp sand in a frost-proof shed.

However, to grow the "baby" carrots :—The seeds may be sown thinly in well-drained boxes of suitably light, rich soil (a good proportion of silver sand should be in the compost to keep it open, and friable) and the young plants should be kept close to the glass to prevent drawing. Thinning out may be necessary to encourage quick growth of the roots to the usual size of about the forefinger.

Occasionally carrots refuse to do well in a garden, the soil being, for some reason, unsuitable. A somewhat light and sandy soil that has been well-manured for a previous crop is generally the best for ordinary outdoor cultivation. Often failure is due to the seeds being buried far too deeply. A little over an eighth of an inch is ample. A good plan, after drawing out the shallow drill for the seeds, and watering it if at all dry, is to mix the seed to be sown with about twice its bulk of very fine leaf soil and sand (silver) so that the seeds are lightly buried as sown. Where the seeds fail to germinate satisfactorily it is a good plan to work in a sprinkling of coarse kitchen salt into the soil in the drills before making another sowing. As soon as the young carrots are large enough to handle they should be thinned out to about six inches apart in the rows. Always leave in the largest seedling in each tiny clump, rather than adhere strictly to the six inch space between the plants.

Varieties of Carrots to Crop Quickly.

If an early sort, such as Nantes, or Dobbie's Selected Stump-rooted, carrot is sown in March, outdoors, in a sheltered, sunny position, it will be ready to lift in July. Other main crop sorts, such as Intermediate, Scarlet Perfection, Altrincham, Early Horn, and Long Red Surrey, should be sown in April. Small sowings from May to July of early sorts will help to maintain supplies of young succulent roots until late in the autumn.

The particular bane of the carrot is the Carrot Fly, the grubs of which eat into, and spoil the roots. These maggots cannot be tackled without destroying the carrots, so the best plan is to guard against them early in the season by placing at intervals along the rows of young plants some old saucers containing rags soaked in petrol and paraffin, the smell of which keeps the adult flies away. The rags must be re-soaked every fourteen days, or less.

Beetroot thrives best in a deeply-dug and fairly rich soil, that has not been recently manured. Land that has just been cleared of a well-manured crop is very suitable. The soil should be loose and friable and, as in the case of carrots, the addition of a sprinkling of coarse kitchen salt, is sometimes desirable.

For shallow soils, that is to say, for those in which a hard, gravelly sub-soil lies near the surface, the turnip-rooted sorts of beet will give the most satisfactory results, as the long, parsnip-rooted types require a very deep, loose soil to be able to grow to their full length.

Growing the Best Beets Quickly.

There is nothing to be gained by forcing beet early, under glass, even with the heat that is necessary for this tender annual, because beetroots are only used in a culinary way, as a rule, when full-sized; and matured beetroots keep perfectly well for use through the winter when buried in damp sand, like carrots. There is one important point connected with their keeping in this fashion that must be mentioned here, and that is, that the bunch of leaves at the top of the root should only be twisted off, never cut off, nor the crown of the root interfered with, or bruised right up to the time of cooking or the beet will "bleed" and the colour will be spoilt.

Quickest results can be got from beetroot by sowing the seeds in threes in specially prepared pockets of soil in the rows, each pocket being six inches from the next, and the rows a foot apart. Prepare the pockets by making wide, circular holes, some two feet deep (for the long-rooted sorts; shallower, about a foot, for the turnip-rooted) by means of a crow-bar, or similar tool, right along the garden line. Fill these holes with a nice rich, loose compost, a mixture of loam, silver sand, and leaf mould is very suitable. Into this place the seeds in threes, well apart. From the young plants which germinate pull up the weakliest two of each lot, leaving the strong one to develop as it will quickly do if kept well hoed, and watered in times of drought. The globe, or turnip-rooted beets may be sown in April, May and July. The long-rooted, which take longer to develop, and are not so hardy, should not be sown until May.

Good varieties are as follows:—*Long-rooted*—Dobbie's Purple, Dobbie's Green, Cattell's Dwarf, Henderson's Pine-apple, Obelisk; *Globe-rooted*—Dobbie's Selected Globe, Egyptian Turnip-rooted, Silver, or Seakale Beet, in which the mid-ribs of the leaves are used as a substitute for seakale.

6.—Quick-growing Varieties of Green Vegetables.

The most typical members of the cabbage family, the cabbage in its many varieties, the savoy, Brussels sprout, kale of many kinds, cauliflower, and broccoli, are an important crop in the average kitchen garden, and one which is well worth attention because "greens", as they are termed in general, are an important item of human dietary, and should be quite fresh when used, both as supplies of mineral salts and ruffage for the digestive system, and to be attractive to the palate. These are the main reasons why the gardener with limited space for vegetables will find it advisable to grow at least one sort of greens for, so far as price goes, they can be purchased all the year round from shops quite cheaply; and also, in a decidedly withered condition!

The cultivation of all is substantially the same. But before making a choice of seeds, or young plants from the nursery, it should be realised that, while quick maturity is largely a matter of good cultivation, it depends, in the first place, upon a choice of the right varieties, which have been produced to mature rapidly under average outdoor conditions of cultivation.

Sowing and Planting "Greens."

Sowings may be made thinly in drills, or the seeds may be widely scattered broadcast, this latter plan being usually adopted as greens of all kinds actually benefit in growth from transplanting when in their fourth leaf or so, and big enough to handle easily.

Sowings of kinds to be harvested in spring may be made broadcast on a sunny border about the middle of July, and the middle of August, the young plants being ready to plant out in rows about twelve inches apart, and fifteen inches between the rows, late in September, an excellent time, as a rule, for dampness of soil, with still enough natural warmth in the earth to give the rootlets every chance to make a good contact before severe weather comes along.

Always be careful to plant firmly even when the soil is light, and down to about the branching out of the leaves from the stem. Rather deep planting, unless on heavy soils, is generally an advantage, helping towards sturdy, compact growth. Water well to settle the soil about the stem, and continue watering with rain water from the fine rose of a watering can every second night or so if the weather is at all hot and dry until the plants pick up and show that they have become established in their new positions.

Summer-ripening varieties of greens should be sown early in May; and autumn, in June and July. Varieties for winter supplies of greens (such as drumhead cabbages) are sown about mid-summer.

Savoy varieties for use from September to April are sown in April, May and June. Red pickling cabbages should be sown early in spring and planted out in rows fifteen inches apart. Winter varieties, in particular, are helped by earthing up (like potatoes) to the lower leaves. This gives them greater ability to withstand rough winds which are apt to loosen the roothold and thus weaken the growth and hinder the progress of the plant. Where it is found that spring-sown cabbage is apt to "bolt," to run quickly to flower and seed, reliance should be placed rather upon autumn-sown varieties.

Soils Preferred by Greens.

A fairly light soil that has been well manured, either with good, rotted animal, or vegetable manure, is liked by most plants of the surface-ripening cabbage family. They will also do well on the ground that has carried crops of peas or beans, which is usually a very convenient arrangement for growing autumn-sown cabbages on land just vacated by these other vegetables. On this kind of soil, too, the "greens" are generally of good colour, because the land has been enriched naturally by nitrogen from the peas and beans. Otherwise, it is a good plan to give dressings of nitrogenous (artificial) manures to cabbages in active growth during showery weather to hasten leaf and "heart" (or "head" as in the case of cauliflowers and broccoli) as much as possible. One sort of garden "greens" should not follow another on a patch of ground sooner than a year, and then with the intervention of a legume (pea or bean) or root crop other than turnips.

Passing thus from general points in the cultivation of "greens" we may consider in detail the requirements of some particular kinds.

The favourite Cauliflowers may be raised from seed sown in heat (in a frame on a hot-bed will do) in January; or from sowings made outdoors on a sunny position in March and April. As a rule, however, these latter sowings will not be ready until early autumn, whereas the Cauliflowers raised under glass in January, or bought as nursery raised plants to plant out in March and April, will be ready to cut at mid-summer.

Cauliflowers, and Broccoli.

Cauliflowers may be sown also in August, the young plants being protected from severe weather by glass protectors, or cloches, and again transplanted in April, to be ready in summer. If these young Cauliflowers can be given heat all winter they will mature hearts, or flowers (for it really is the flower of the plant that is eaten) in early spring.

The Cauliflower responds well to a richly manured soil, and to top-dressings of nitrogenous manures. To keep the flower heads white, bend over the tall, pointed leaves growing next them, just cracking the mid-ribs to keep them bent, but not severing them or the leaves will wither before the cauliflower is ripe.

Although Broccoli is a vegetable of Italian origin, varieties are now obtainable to maintain a supply of the flower heads in succession from Michaelmas until June. They are sown at intervals from April to June. The plant appreciates deep cultivation of the ground, and a rather heavy, richly manured soil. The plants are tall, and far spreading for the most part, and should thus stand a good two feet from each other; that is to say, two feet apart in the rows, and with that distance between the rows when finally transplanted to their growing positions. Cultivation is otherwise the same as for Cauliflowers than which, however, Broccoli are now much the hardier. In some varieties the tender leaves as well as the flower heads are eaten.

Still hardier are the Borecoles, or Curly (Scots) Kales which are cultivated in the same way as Broccoli. In fact, the Curly Kales are generally regarded as being improved in flavour and appearance (curliness) by frost, and they constitute a thoroughly dependable winter "green". Coleworts are also useful for use in winter, and are cultivated in the same way as cabbages.

How to Grow Good Brussels Sprouts.

An important detail in the cultivation of this favourite vegetable to ensure the quick formation of large sprouts, is to cut away the main leaves from the stem, at the junctures of which, with the stem, the sprouts form, as soon as the sprouts are of good shape and hard to the touch. The tuft of leaves at the top of the stem should be left, however.

The cultivation of the Brussels sprout is similar to that advised for cabbages in general, but best results are got by sowing in heat in February; or else purchasing nursery grown plants to plant out early in April. Or seeds may be sown broadcast, outdoors in a sheltered position, in March and April. The plants should stand about twenty inches apart in the rows unless for the dwarf kinds. The spring sown sprouts come into usefulness in winter and spring; for autumn use sowings should be made outdoors in August, transplanting the young plants where they are to grow in September. Organic manures are preferable to nitrogenous manures, unless in moderate quantities, for sprouts.

Varieties of Green Vegetables to Grow Quickly.

The following varieties of plants of the cabbage family have been cultivated for their quick maturing qualities and should be grown in preference to others to give quick results.

Cabbages. Dobbie's Earlies, dwarf, compact habit, stands the winter well; Improved Winnigstadt. Sow in spring for late summer, autumn and winter supplies; Large York, sow summer for spring use; Dobbie's Perfect Gem, a cabbage for limited space, requiring only a foot from plant to plant. Sown summer, ready to cut in late spring or summer; sown March, matures quickly in autumn; All the Year Round, a useful general purpose sort to sow at any time; Early Offenham, an excellent early variety from late summer sowings. Ellam's Early Dwarf, splendid for early spring use; Enkhuizen Glory, a large cabbage for spring sowing; Sutton's Earliest, dwarf habit, and very quick growth, ready in autumn from spring sowings; Sutton's Tender and True, also quick maturing from spring sowings, with firm crisp hearts; Coleworts, sown in summer ready for use in winter; Christmas Drumhead, sow in May for Christmas use; Wheeler's Imperial, a fairly quick-maturing variety of good size which can be sown in spring or autumn; Large Blood Red (Pickling) can be sown in spring or autumn.

Cauliflowers. Varieties for forcing and early summer use, Walcheren, may also be sown in autumn; Early London White, matures quickly; Improved Snowball, a close-headed Cauliflower, specially useful for autumn sowing, i.e. for early summer use. Sutton's Universal, a good mid-season variety. May be sown in spring as well as autumn: Dobbie's Earliest of All, Dwarf Erfurt Mammoth Early London. Varieties for late Summer and Autumn Use: Sutton's Early Giant, Sutton's Autumn Mammoth, Veitch's Autumn Giant, Eclipse, Dobbie's Excelsior.

Broccoli. Varieties for Autumn Use. Sutton's Michaelmas White, sow in March for use at Michaelmas; also good for successional sowings: Sutton's Autumn Protecting; Extra Early Roscoff, a French variety of Cauliflower-Broccoli, particularly suited to southern gardens where large, white heads may be gathered as late as December. Veitch's Self-protecting Autumn; Italian Sprouting, flowering sprouts being ready in August and September from spring sowings; Dobbie's Lily White; Varieties for Winter and Early Spring Use: Backhouse's Winter White, naturally self-protecting, with fine large white heads at mid-winter; Veitch's Early Market; Early White; Penzance, large heads, a very hardy variety; Sutton's Winter Mammoth, produces immense white heads at mid-winter, self-protecting habit of growth; Improved Winter Sprouting, quickly yields a profusion of white sprouts. May be used for successional sowings: Dobbie's Springtide, well-formed heads of great purity and fine texture in March and April; Varieties for Spring Use: Sutton's Eastertide, comes into use in April when vegetables of this kind are generally scarce; Sutton's Safeguard Protecting, pure white heads can often be cut in spring after a severe winter; Purple Sprouting, is one of the few garden greens that will stand prolonged frosts in winter and be fit for use in spring; Knight's Protecting, heads of medium size, fit for use in March and April; Varieties for Use in Summer: Late Queen, a very hardy variety standing the winter, and producing medium-sized heads in May and June; Methven's June, stands the winter better than most sorts, and supplies white heads until nearly the end of June; Sutton's Whitsuntide; Sutton's Standwell will withstand severe winter frosts and come up smiling for early summer use; Veitch's Model, a dwarf, and perfectly hardy broccoli ready for use in May and June.

Brussels Sprouts. Dobbie's Favourite, a very hardy dwarf variety, stems well packed with hard sprouts; Dalkeith, hardy and most productive; Sutton's Fillbasket, produces quantities of large, hard sprouts. Sutton's Dwarf Gem, one of the earliest of all low-growing varieties; Veitch's Exhibition, a distinct early variety, perfectly hardy, and maintaining its supplies of sprouts over a long period; Aigburth, a prolific cropper; Wroxton, large and firm sprouts of excellent flavour.

Savoy Cabbage. N.B. Savoys are generally sown in March, April and May for winter and spring use. Sutton's Best of All mature early; Sutton's Earliest of All, sown mid-March will produce savoys by early August, a dwarf type; Sutton's New Year; Dwarf Green Curled, a very hardy type; Late

Drumhead, to succeed winter kinds; Early Ulm, a quick-maturing, dwarf type.

Borecole, or Kale. A hardy green for winter and early spring use, improved in flavour by frost. Sow in late spring or summer. Victoria; Extra Curled.

7.—Leeks, Onions and Saladings.

The production of plants for flavourings and salads may well engage the attention of the gardener interested in the cultivation of vegetables. They comprise a class of vegetable that should be quite fresh when used, with the exception of ripened onions which, of course, can be bought at fairly reasonable prices, if need be, in good condition, but are never so good, nor by any means so cheap, as those grown at home.

Leeks are a very easy vegetable for the amateur to grow for table use, as from sowings outdoors in March or April, either in drills, or broadcast, taking care to sow thinly, plants will be large enough to pull for culinary use, flavourings, and stews, from August onwards. To maintain a supply for successional use it is merely necessary to thin out the original rows, slowly, transplanting a few dozens at a time in rows nine inches apart. Unlike young onions, leeks are not spoilt by being left rather crowded in the seed rows for a time, and quite accomodatingly beginning to grow afresh when transplanted. Leeks like a richly-manured soil, and throughout the period of growth after transplanting soon show the benefit of occasional doses of weak manure water, and soot water.

The blanching of leeks for culinary purposes need not be the elaborate affair made necessary when plants are being grown for exhibition, with very large, long white leaf stems. for ordinary use, therefore, merely tie around the lower part of each plant a broad strip of thick brown paper, to form a collar, with the fibrous rootlets only just visible at the bottom of the collar. Insert each young plant rather deeply, quite three to four inches in the soil, filling round with rich, loose soil. Alternatively, many people transplant while quite young, waiting until the plants have made good growth before tying the paper collar around each, and earthing up to blanch the stems. Feedings of a nitrogenous manure are as helpful as weak, liquid animal manure; but leeks should always have soot water, occasionally.

Onions to Order.

The medicinal value of onions is now generally recognised and the stupid prejudice against this most wholesome of vegetables is dying off gradually. A fresh supply of onions to order is thus a daily necessity in most kitchens.

Even without the aid of artificial heat it is possible to maintain supplies of young onions all the year round. Largely it is a matter of sowing the right varieties at the right times of the year for succession. There are many sorts of onions, as there are many sorts of cabbages, some that have been cultivated to complete their entire span of growth during mild weather, and that will not stand frost, and others expressly produced to withstand severe weather out of doors at any time of the year.

The greatest number of varieties develop as a single root, or corm; but there are also the bunch-rooted sorts, termed shallots, and the old-fashioned tree onions which are bunch-rooted in the shallot style when fully matured, and develop also at the tops of their stems, bunches of small bulblets which can be used in pickling, and from which also the future crop is grown. Tree onions are rather coarse in flavour, but their cultivation is exceedingly simple. They are quite indifferent to frost, or great sun heat, and a continuous supply is easily maintained by planting out the bulblets, singly, in rows nine inches to a foot apart; repeating the process when they, in their turn, have developed and split into several onions of fair size, with tall, tubular stems and bulblets at the top to continue the cycle of growth.

All Onions Need Feeding.

A fact that must not be overlooked in the cultivation of onions of any kind, from the most delicately flavoured summer kinds, to the coarser, but most useful and hardy tree onions, is that their growth will be slow, and poor, unless the soil is such as will afford good, rich food to the plants from seedlings to maturity. It must be remembered, too, that all plants of the onion family (unless chives, and garlic, which will produce in sufficient abundance for ordinary requirements, year after year, on the same patch of ground, seasonally manured) demand frequent change of quarters. Onions should always follow greens, or roots, or surface crops such as marrows.

The soil intended for the cultivation of onions should be deeply dug, first of all, and as long before the sowing as possible. If arrangements permit of the preliminary digging being attended to at the beginning of the winter, so much the better. If the soil is fairly loose and friable, it may have well-rotted stable, or vegetable manure (preferably the former) dug into it as the digging proceeds. If the soil is hard, or very wet, the manure should not be dug in the first time it is turned over. Dig again after an interval applying the manure then. Kainit is a useful artificial manure for onions, and may be applied at the rate of five hundredweights to the acre.

Leave the soil thus, rough, for a month if possible, then fork over lightly with a garden fork to break up any lumps, and when it is drier rake well to reduce the surface to a fine tilth. Press, or roll the ground hard. Take out drills with the edge of a hoe or rake, some ten to twelve inches apart, and sow the seeds as thinly as possible, covering with fine soil, and pressing down firmly. The seeds of summer-maturing varieties may be sown outdoors as early as February and March if the weather is open, and favourable. Scatter soot freely over the ground to ward off attacks of the onion fly. If it has been possible to prepare the ground for the crop in winter a little lime scattered over it is a still better preventative against this troublesome pest.

While it is true that the thinnings of all varieties of onions, saving the bunch-rooted types (shallots and tree onions), may be used in salads as " spring onions ", it should be remembered that there are varieties grown specially for this purpose, and that are preferable, where there is space to cultivate different kinds, because of their more delicate flavour.

General Cultivation and Forcing of Onions.

As we have seen, onion seed may be sown in spring or autumn, out of doors ; indeed, most gardeners sow at both these seasons to ensure succession of supply and also from the general experience that autumn-sown onions (of suitable sorts) are more likely to be immune to the attacks of the onion fly during their period of development the following spring, than onions which are sown, and come to maturity the same year. The largest bulbs (or corms) are got undoubtedly, under good cultivation, from a good exhibition sort sown in August to September.

Onions may be sown at any season of the year if heat, or the protection of a frame over a hot-bed is available for those sown in winter. Late autumn sown onions of a tender " spring onion " variety for flavour, to supply salad needs in winter, may be managed by planting the seedlings out in rows, in soil that has been manured with very well rotted animal manure and mixed with a little leaf soil, if a range of glass protectors is put over the row, or rows. The seedlings can be planted fairly thickly—an inch or so apart—as they are to be used while immature. Protected from the frost, aired on fine days, and with dry sacks thrown over the protectors on nights threatening to be frosty, they will continue to grow, and prove most useful until spring-sown supplies are available. A slight sprinkling occasionally of nitrate of soda before watering—be careful neither to over-water, nor under-water ; keep the soil just on the dry side—helps on growth tremendously.

Transplanting Onions.

Care should be exercised in pulling up young onions that are to be transplanted. Actually, they ought not to be pulled at all, but gently eased with a hand-fork, or a large dinner fork, if they have been sown in boxes in heat in January and February, as is often done to obtain very large onions the same season for show. However, if the row has been well-watered, outdoors, the young plants will thin out easily, without damage to the roots, and without disturbing the best, strong-growing seedlings left in the row to mature quickly at a distance of about six inches from plant to plant. The large-growing sorts, such as Ailsa Craig, should stand a foot apart. The thinning can be transplanted to similar spacing. If carefully looked after, with the soil between the rows kept open, and free from weeds, all will mature much about the same time. The thinnings of spring onions that are not to be used for salads can be transplanted and grown on, to be dried and used for pickling. Weak animal manure water, and slight dressings of nitrate of soda before a shower, or before watering, are excellent stimulants for onion growing out of doors. The same remarks apply to the cultivation of tree onions, the propagation of which has already been described.

The Useful Shallot.

The useful shallot is usually propagated from bulbs planted in February, or March, about the time of year when spring-sown onion seed is put in; but they may be grown from seed sown in the autumn, the seedlings being transplanted and grown on like autumn-sown onions.

Shallot bulbs to plant may be bought from most seedsmen, at so much per seven lbs. Prepare and manure the ground as for onion seed, and press the bulbs into it well in rows, nine inches from bulb to bulb. Many amateurs make the mistake of not pressing the bulbs far enough into the ground. They can be pressed in, or planted, so that the loose soil comes up almost to the collar, where the old stem has been twisted off. By this method the nuisance of having to push in bulbs again, because of the underground burrowings of earthworms, will be largely done away with. On very wet, or heavy land, however, it will be advisable to adhere to the custom of merely pressing the bulbs half-way into the ground. Each bulb increases to from half a dozen to a dozen or more, and the crop is ready to lift in late July or August, having increased, in most cases, by a hundredfold. Not only is the shallot an easy vegetable to grow, but it is a quick-growing, and most profitable one. The bulbs are strong-flavoured, however, and are mostly used in stews and for pickling.

An important point in the cultivation of all kinds of onions is to guard against breaking the leaves (leaf-stems) or even cracking them. When this happens, the bulb is unlikely to develop further. In the ordinary way these leaves, or stems, fall over themselves when the bulb matures, and the outer skin then commences to colour, and ripen. To accelerate this process, when the bulbs are as large as required, the leaves may be bent over by going along the rows with a rake. Choose dry weather to do this. When the leaves are withered, lift the bulbs and leave them to ripen in the sun. Should the weather become wet and cold, place the onion bulbs to ripen spread out upon straw mats, or dry sacking, on the floor, or on tables, in an airy outhouse. Never put them away in bags or hampers, to store for winter use, until the outer skins are thoroughly dry, and cracked. Bulbs put away at all damp will sprout into growth in the dark and, of course, be spoilt for culinary purposes. These remarks apply to the ripening and storage of all kinds of onions.

Onions for All Purposes.

There is no need to refer to shallots and tree onions, specially in naming here varieties of single-rooted onions that will be found to be useful for various purposes—for use as "spring onions", or spring or autumn sowing, to harvest respectively in autumn and later summer, with outdoor cultivation.

Varieties for General Spring Sowing. Ailsa Craig, is also sown in autumn in sheltered districts; Sutton's A.L.; Sutton's Improved Reading, a good main crop variety; Brown's Spanish; Sutton's Improved Queen, an unusually quick-growing spring-sown onion. From seed sown outdoors in March onions of quite usable size are produced about June; or sown in July, for use by the autumn; excellent for forcing under protectors in winter; Small Paris Silver Skin, a quick-growing "spring" onion; and for pickling. Dobbie's Maincrop; Cranston's Excelsior; Bedfordshire Champion, not very particular as to soil; Brown Portugal. Varieties for autumn sowing: In general these will be found most useful for the supply of "spring onions" (though perhaps not always of delicate flavour) from outdoors for use during the early months of the year. Giant Rocca (Tripoli) a fine large brown onion for autumn sowing; James Keeping, fine for main-crop, the medium-sized, oval bulbs are famed for their keeping qualities in a ripened state; Rusham Park Hero, a handsome straw-coloured onion of very large size. Silver-skinned Pickling, fine as a "spring onion"; Trebons, large yellow onion; White flat Mammoth; White Lisbon, supplies nice "spring" onions and large white onions mature; White Spanish, mild in flavour; Zittau Giant Yellow, pale salmon colour, of fine flavour, and a splendid keeper; Large Tripoli; Nuneham Park, a mild-flavoured, flat onion; Sutton's Long-keeping.

Some Useful Quickly-grown Salads.

There are several useful, quickly-grown salad plants, besides spring onions, lettuce, and radish, the cultivation and forcing of which have been dealt with.

Foremost among them is the quickest-grown salad of all—or rather, the two, because they are invariably used together, mustard and cress. As most folks know, they are, of course, the plants in the seedling stage that are used for salads which explains why cress is ready for use in ten to fourteen days (in a warm greenhouse inside a week all the year round) and mustard a few days earlier. The most satisfactory plan is to sow the seeds rather thickly, in boxes of fine soil, watering the soil well just before sowing. Do not cover with earth, but place a sheet of glass right over the box, and the seed will quickly sprout.

Sow cress at intervals of a fortnight or so for succession during the warmer months; at rather longer intervals in winter. Sow mustard at intervals of a week to ten days. In spring to autumn place the boxes in a shady, but warm place outdoors; in winter in a frame, greenhouse, or sunny window. Both mustard and cress may be cultivated outdoors in summer, sowing the seeds thickly broadcast for succession as advised, but covering thinly with some light, sifted soil. The varieties of cress are Golden or Australian, Perpetual, and Extra Curled. Watercress is propagated from seeds, or slips, planted in wet, well-manured soil, and kept moist, in a shady, or damp spot in the garden. Because of the uncertainty of obtaining commercially watercress free from pollution by sewage, it is distinctly best to grow one's own supplies in the garden where cleanliness and safety from disease germs is beyond question.

Forcing Endive, and Sea Kale.

Endive is a most useful salad to sow in drills eighteen inches apart in April, for summer use. Sow at intervals of about a fortnight in June to September for autumn and winter use. The most suitable soil is a light, well-manured, and well-cultivated one—as from a crop of peas or beans. Sow thinly and cover lightly with fine soil. Thin out to a foot apart. The plants must never be allowed to suffer from drought or they will spoil and run to seed. Blanch for use by tying, or covering with pots, boxes, or anything light-excluding of a similar kind. If the plants are shifted to a cold frame in October, and covered with leaves to blanch, supplies may be obtained for two or three months longer.

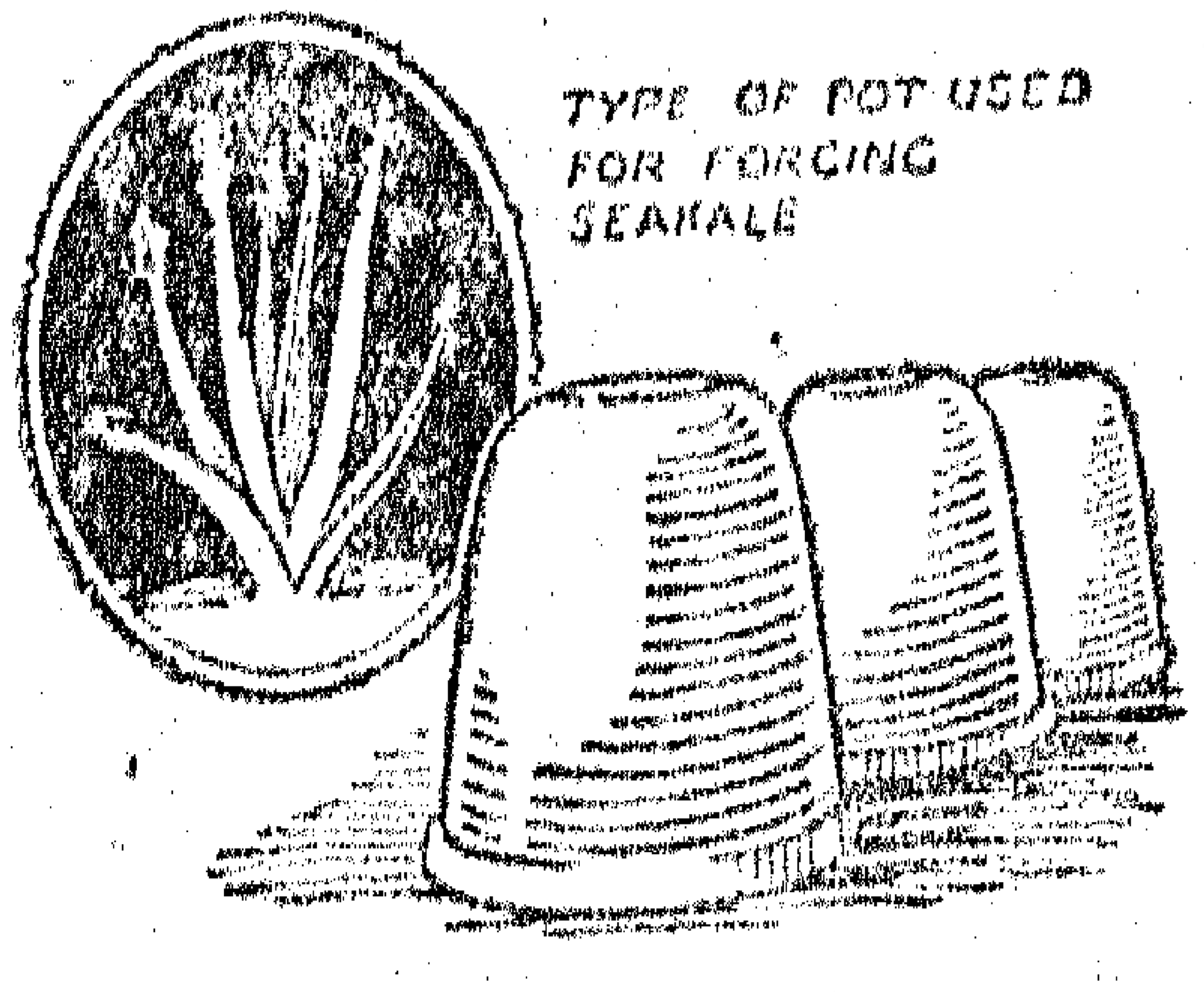

Fig. 8.—Forcing Seakale.

To obtain supplies of Sea Kale quickly roots must be bought for forcing. Sea Kale grown from seed takes two years to produce supplies of shoots for domestic use. Plant the roots in deeply-dug, well manured soil which has been sprinkled with coarse salt. The roots should be two feet apart each way. Sea Kale earthenware pots, or old buckets with the bottoms knocked out, are used to force the shoots as shown in the accompanying illustration.

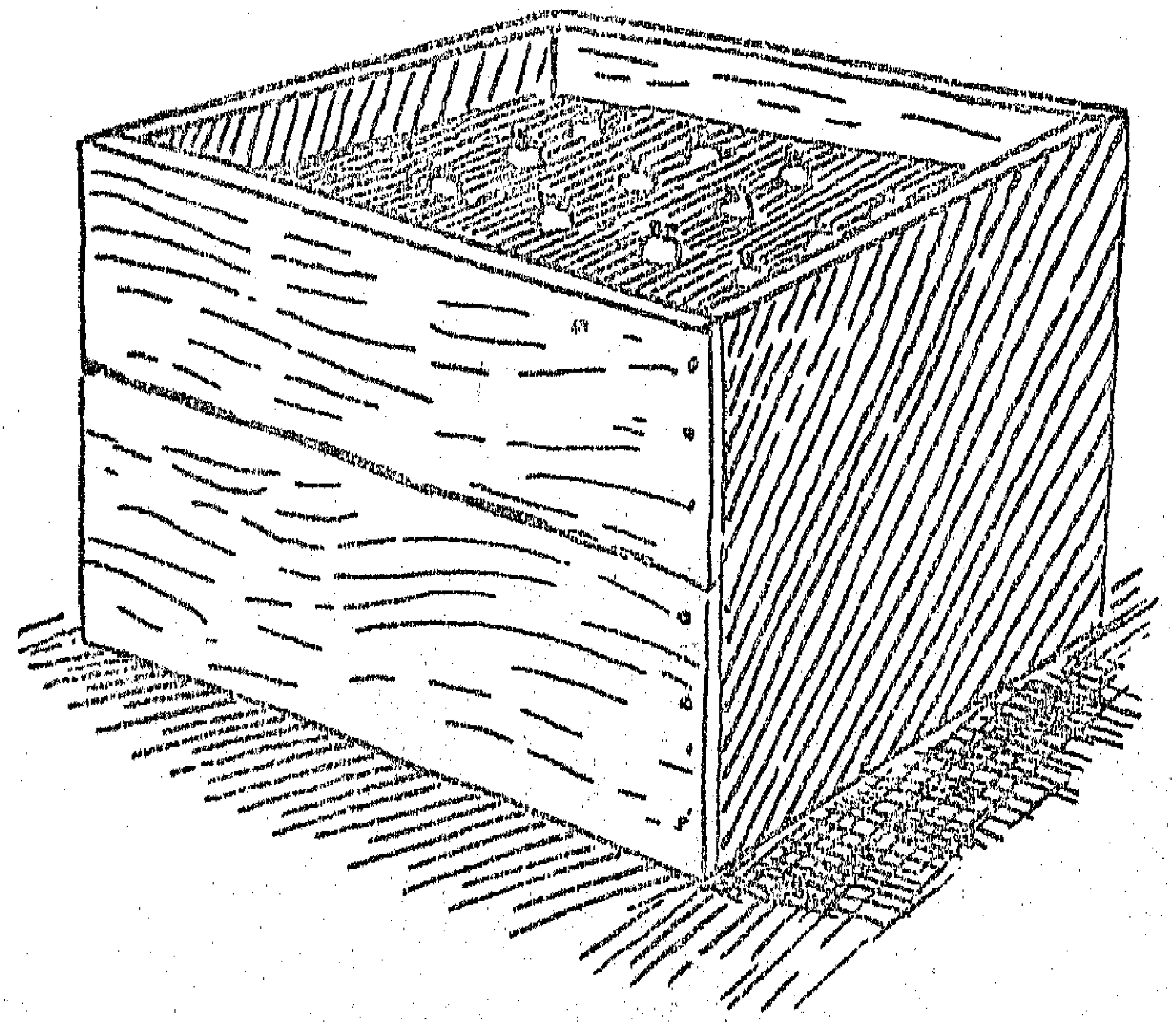

Fig. 9.—Forcing Chicory in Boxes.
The Roots are planted five inches apart each way with about an inch of top above the soil.

Chicory and Dandelion are two salads that may be considered together for purposes of cultivation. Neither are used unless when blanched, being far too coarse in flavour for most palates when in the natural, green-leaf state. Roots of

Dandelion for blanching purposes may be obtained, as a rule, without much trouble, in odd spots in the garden, or by country roadsides. If not, the seed may be sown as for Chicory, or Witloof.

One or two sowings of Chicory should be made in drills a foot apart in April and May. Ground that has been well manured for a previous crop will give the quickest, and most tender growth. Thin out the seedlings to nine inches apart. Three weeks before required for use, take up the necessary quantity of roots, cut off the foliage just above the crown. Pack the roots fairly tightly in a box, or pot. Cover with fairly light soil, shaken well in among the roots. Place in a cellar or shed, and water with tepid water from a fine syringe, keeping the soil just moist. A few roots will yield blanched leaves in abundance, and when they become exhausted succession is easily kept up from the fresh roots outdoors for supplies throughout the winter.

Corn Salad, Cardoon, and Spinach.

Corn Salad, or Lamb's Lettuce, is often of much value in early spring as a substitute for Lettuce and Endive. For preference it should be sown in well-manured, deeply-worked soil, in a sunny position facing south or south-west, in drills eight inches apart, sown in March and April, and for succession, in August and September, thinning out the plants to four inches apart in the rows. It may be sown as late as October. Protect the leaves in winter with litter.

Cardoon is eaten as a blanched vegetable in winter. The seeds are sown in groups in April or May, in well-worked ground. The groups should be about eighteen inches apart in the rows, which should be about three feet apart, inter-cropping with low-growing vegetables being adopted to economise space. The plants should be thinned out to the strongest, which will require to be tied to a stake. Blanching commences in August, usually. The Cardoon is not a vegetable for small gardens as room is necessary for its cultivation.

The Round or Summer Spinach may be sown any time from February to July, making the earlier sowings in sheltered positions. The Prickly, or Winter Spinach is sown in July to September, although not after August on heavy soils. Sow the seeds in drills fourteen inches apart, thinly, and keep the ground well hoed between the rows. Both sorts like ground that has been well manured for a pea or bean crop. Spinach is used as a cooked, as well as a green vegetable.

8.—Vegetable Marrows, Pumpkins and Cucumbers.

In the Southern counties these three vegetables are half-hardy annuals, botanically speaking. That is to say, they are grown on in heat as seedlings and are planted outdoors where they are to fruit in April or May. The seeds may be planted outdoors under hand glasses on a southern, sunny exposure in late April with every prospect of germinating successfully, unless the weather is unduly cold. But although young plants may be raised thus without artificial heat, the difficulty experienced with tomatoes planted, as seeds, outdoors, again arises, for the plants may not be sufficiently developed before the earliest frosts—which are absolutely fatal to all three—occur and before the plants have had much opportunity to ripen their fruits. The best plan is, therefore, to raise them indoors, although the accommodation available may be no more than the sunny window of a heated sitting-room. Vegetable Marrows, and sometimes outdoor Cucumbers, may be purchased as seedlings in their third or fourth leaf, ready for planting out, in May. Such plants will do very well as a rule; but, unfortunately, it is seldom that they are of a good variety.

Likes and Dislikes of Marrows, etc.

A shallow pit should be dug for each plant, and filled with a rich compost of loam and rotted vegetable, or animal (stable) manure. The main point is that the compost should be rich, for these plants are gross feeders, and that it should not cake readily. Copious waterings will be necessary when dry weather comes, and a compost that cakes easily is a perpetual nuisance, for it must be forked and made loose on the surface for the water, and liquid manure, to percolate easily to the roots.

Plant the marrow in the centre of this pocket of prepared compost, in some light soil, scatter some fresh soot around it, and cover it with a flower pot for the first few nights as a protection against possible frosts, especially if the seedling has been grown in heat. The soot is to ward off slugs which dote upon baby marrows and cucumbers; and the sooty guard must be renewed whenever it becomes at all wet. This will be often, because the young plants must not be allowed to suffer from lack of moisture although a sodden condition of the soil should be avoided.

As soon as the fruit begins to set, apply weak liquid manure, or soot water. Alternate doses of these mild stimulants are best. The flowers of all these plants are male and female, the former greatly predominating in number. The female flowers may be easily distinguished by their thickened stems, even as buds, and after fertilization these stems thicken out into the embryo fruit. Many growers pinch out the tips of the shoots above every two female flowers that set as fruit if the plant is of vigorous growth. Fresh fruiting shoots will then be thrown out, while nourishment is temporarily diverted to the quick development of those fruits which have set. Do not allow the young marrows to grow too large before cutting them, unless when large marrows are wanted for special purposes. By cutting the marrows of small, or moderate size, the plant is relieved of strain, and will immediately begin to set more fruits so that the supply is maintained over a longer period.

Cucumbers Out of Doors.

To fruit cucumbers out of doors successfully, a sunny, southern atmosphere is necessary, and the right sorts of cucumbers, that have been brought on indoors, as advised for vegetable marrows, to the fourth rough leaf or so, before planting out in May. They may be set with the first flower buds—usually male flowers—and if carefully moved from the nursery pots into the prepared compost as described, the roots need never be disturbed in the slightest degree and the growth of the plant will go on unchecked.

The outdoor fruiting sorts of cucumber however, do not take up anything like the amount of ground space required by vegetable marrows (unless the bush type), each plant of which will cover yards of garden space if permitted to wander unchecked. Outdoor cucumbers, on the contrary, will do very well in a soil area of about a yard by twelve inches, roughly speaking. The fruits of cucumbers do not set quite so readily as those of vegetable marrows. Dry, sunny days, with plenty of winged insects about, supply the most favourable natural conditions. Cucumbers also quickly suffer from lack of moisture. They are even grosser feeders than marrows, and weak, liquid manure may be watered into the roots two or three times weekly while the plant is bearing to keep it vigorous, and to swell the fruits already set. Outdoor cucumber plants are not sufficiently vigorous, as a rule, to permit of runners being stopped as with marrows. It is best to let the plants develop naturally. But by cutting the fruits as soon as large enough to use the period of usefulness will be lengthened appreciably.

Pumpkins and Gourds.

These close relatives of the vegetable marrow may be cultivated along similar lines. But, whereas vegetable marrows prefer to ramble along the ground (although they will make for a hedge, if near, and attempt to scale it), pumpkins and gourds require a low hedge, heap of pea sticks, or something of the sort; or the posts of a verandah, or shed, to climb over. Their fruits are edible in the younger stages, and often highly ornamental. They can scarcely be too well fed when in good bearing condition, but are apt to exhaust the ground, as, indeed, do vigorous marrows unless well fed with liquid manure whilst bearing.

Gourds will grow to an enormous size where only one fruit is allowed to a plant, and the feeding is liberal. Weights of a hundred pounds have been attained by single specimens. There is little utility in these huge gourds, however. The purely decorative pumpkins, which are often most brilliantly coloured, do not ordinarily grow to a large size although with them, bulk can be stimulated by limiting the fruits to one or two per plant.

Good Varieties of Marrows and Cucumbers.

As indicated above much of the success in getting marrows and cucumbers to fruit well and quickly out of doors (the conditions of culture as advised being observed), consists in choosing the right varieties. And here again, one must emphasise the importance of buying young plants, if the seedlings are not raised at home, from a reliable nurseryman who will supply plants of good named varieties.

Vegetable Marrows.—The Long White is one of the best for general cropping qualities, and is pretty generally obtainable.

The Long Green is also good, but is of more foraging habit, and when of vigorous growth may be stopped, frequently, with benefit to the number of fruits that set. Dobbie's Prolific is a very heavy cropper, sometimes bearing marrows at every joint under good conditions. The fruits should thus be gathered fairly young to promote plenteous bearing. The fruits are cream coloured, appear early, and are of fine flavour. Improved Custard is another beautiful and delicious marrow, and a good cropper. King's Acre Cream, another early bearer, of long, lemon-coloured marrows; Moore's Cream, an old-established variety bearing smallish fruits, but of delicate flavour; Pen-y-byd, also an old variety bearing enormous fruits when permitted, and a vigorous grower; Rotherside Orange is a prolific bearer of large, deep orange-coloured fruit, rounded, and of delicious flavour. Bears early; Sutton's Table Dainty, yields early in the season a prolific crop of smallish, striped fruit. Sutton's Tender and True, is of the bushy type, and thus suited to small gardens. The rounded, handsome mottled fruit is delicious, especially when cut young; Improved Green Bush bears large, green fruit, rounded in shape, the plants occupying little space as they are of bush habit.

Outdoor Cucumbers.—Stockwood Ridge, a good, hardy outdoor sort; Sutton's King of the Ridge is a decided advance on the old, small and short prickly ridge cucumbers, the fruits being twelve to sixteen inches in length, of good colour, and almost smooth; of delicious flavour, and sets well. Sutton's Long Green Outdoor Cucumber produces fruits of great length resembling good frame cucumbers. They are of excellent flavour. Sutton's Prolific is of hardy constitution outdoors and bears fruits of good flavour and size. Long Prickly, one of the older varieties of outdoor cucumber, will grow stumpy fruits about six inches long under good cultivation and liberal feeding. The fruit is generally of delicious flavour when quickly grown, and cut as it ripens. Short Prickly Cucumbers, or Gherkins, are merely grown for pickling. The fruits are only a couple of inches long, thin and prickly.

Gourds and Pumpkins.—Sutton's Mammoth Gourds are of varied, decorative colours. Veitch's Giant Pumpkin; Large Yellow Pumpkin; Ornamental Gourds.

9.—Hurrying Up Celery, Rhubarb and Herbs.

Celery is a rather leisurely vegetable in the matter of growth unless steps are taken from the outset to obtain quicker results than would be the case were the plants left to amble along in their own fashion. No attempt to raise celery should be made on light, sandy soils, for the amount of sheer hard digging, conveying to the spot suitable heavy, rich compost to replace the unsuitable sandy soil dug out, and the later heavy watering that will have to be attended to daily in the height of summer to gather celery stalks in autumn and winter at all worth eating, cannot be regarded as worth while for any but the most enthusiastic of gardeners, considering that celery of fair quality can be obtained, as a rule, fairly cheaply in most residential districts.

However, where the soil is suitable, and the situation not too dry—a rather wet, and almost marshy situation suits celery splendidly—there need be no particular trouble, or delay in getting good results, and quick results, from celery.

Celery seed can be raised outdoors if sown in boxes of fine, rich compost about the beginning of May. A sheet of glass should be placed over the box to conserve moisture until the plants are well up. They must never be allowed to lack moisture. But young celery plants raised in this way will be more useful for late spring use, in sheltered districts, than for autumn cutting. Their development is slow compared with those raised in heat from sowings in February, or early March.

Making Celery Trenches.

If a greenhouse, or a frame over a hot-bed is not available for bringing on the young plants under glass, they can be got, as a rule, from good class nurserymen as young plants about the end of May, or the beginning of June. To avoid disappointment (unless there is no particular hurry for the vegetable) it is wisest to start with well-grown, healthy plants from a nursery in the first week in June.

Before purchasing the plants the trench, or trenches, must be prepared. The number of trenches will depend naturally upon the appetite of the household for celery. The plants require a distance of a foot between each down the centres of the trenches, and the length of each trench will depend upon individual circumstances. Allowing for a few plants over the number calculated for the needs of the kitchen, it will be thus a quite simple matter to prepare the right trench accommodation for the necessary number of plants. With ordinary care they do well, and little allowance need be made for failures. It is important, however, that the young plants should have been carefully hardened off before placing them in their growing quarters.

Each trench should be about eighteen inches wide, and six to nine inches deep. If the land is heavy the shallower trenches will do, as it is on light lands that a greater quantity of moisture retaining compost will have to be allowed for, and that the plants will benefit, finally, from a deeper blanching, or earthing up. The earth taken out of the trench should be thrown up just along the windward side (if any) but not to interfere with the sunlight.

At the bottom of each trench place well-rotted stable manure to the depth of three inches, incorporating it well with the soil. By the way, if the soil taken out from the trench in digging is at all coarse, and stony, it is well to sift it, in piling up at the side, or sides, of the trench, so that, when required, a nice, friable compost is to hand for filling in the trench to blanch the plants. The young plants, with root balls intact, should be firmly planted down the centre of the trench a foot apart.

To Grow Extra Large, Juicy Celery.

The method described will do very well as the preliminary stage in the cultivation of celery for ordinary requirements. To grow extra large, juicy stalks rather more elaborate plans must be made. Prepare the trench as described, but to depth of about two feet. Fresh horse manure should then be put into the bottom of the trench to a depth of a foot, and it should be firmly trodden down. On the top of this put a layer of compost of good loam, and well-rotted stable manure, in equal parts mixed, to a depth of three inches. Nowadays, however, stable manure is not always a garden commodity easy to obtain. If there is a shortage in supplies of it, particularly of the fresh horse manure, the bottom layer may be dispensed with and a layer of six inches deep of rotted manure and loam compost put down instead of the layer three inches deep.

On the top of this layer of manure and loam, place a further layer of prepared compost, this time of good, sifted garden soil and leaf mould mixed, in the proportions of about two (of soil) to one (of leaf mould) mixing them thoroughly into a rich, friable compost, to a depth of another five inches, evenly spread. The young celery plants should be carefully and firmly planted in this at a distance of about fourteen inches, instead of twelve inches, as for ordinary cultivation because, with the richer feeding, and especially with the stimulus of the heat from the bottom layer of fresh horse manure, they will develop more rapidly, and to a bigger size, than under the simpler plan first described.

How and When to Blanch Celery.

The attractive whiteness (or pinkness, according to the variety) of celery stalks, and their tenderness, is due to careful blanching at the right stage of development.

Blanching should begin in July about a month to six weeks after planting. First of all, remove any side shoots, and decayed leaves there may be. Some growers tie a collar of stiff, brown paper, to come up to the height, almost, of the leaves, around each plant before beginning to fill in the fine earth originally taken out of the trench. Others (and even for celery for exhibition) simply fill in the earth when reasonably dry and fine, so that it fills in closely around the leaf-stalks. With rather light soils this is the better method in ordinary seasons.

Whether paper collars are tied on or not, this first filling in of the soil should be to a depth of about six inches, being careful to surround the plants completely, and fill in the trench to that depth fairly levelly. A fortnight or so later, whether or not a paper collar has been employed in the preliminary blanching, take a strip of stiff brown paper, about two feet long, and six inches wide, and tie it loosely around the plant with raffia grass. Heap more fine soil loosely around these paper guards, to make the blanching still deeper. A further collar can be added when the stalks have grown tall enough, if very long, white celery stalks are required, earth being again heaped up around the collar.

To keep this earth in position it will be found necessary to bank it with the flat side of a spade, then place boards along each side of the row to prevent the earth from crumbling down as it dries, or is washed down by rain. Throughout the entire process of cultivation occasional dressings of dry soot and (or) fine lime will be found of service in checking the ravages of slugs, and the celery fly, both of which quickly spoil the appearance of the stalks. It may be mentioned that Celery Leaf-spot Disease is due to a fungus which can be safeguarded by special treatment of the seed, which most reputable seedsmen attend to now before sending out their celery seed.

Varieties of Celery to Grow.

White Varieties, i.e. the blanched lower parts of the stems are white :—Sutton's Solid White, a good maincrop variety, producing large, sweet stalks ; Sutton's White Gem, a rather dwarf, early maturing variety, producing white, crisp stalks with a nutty flavour ; Sutton's Giant White, a strong-growing variety, crisp and of good flavour ; Veitch's Superb White, produces solid, pure white stalks, and is ready for use early ; Wright's Giant White, a vigorous grower ; Golden Self-blanching is of sweet flavour, and crisp, the stalks blanching early and saving much time in cultivation details ; Dobbie's White Queen, an exceptionally strong grower of solid white stalks, crisp, and free from disease ; Dobbie's Invincible White, grows to a great size without running to seed ; Henderson's White Plume, a fine white variety, easily blanched. Red and Pink Varieties :—Clayworth Prize Pink, a fine, solid, maincrop variety ; Wright's Grove Red, of delicate flavour, large, solid and crisp ; Dobbie's Selected Red, a very strong-growing, crisp, sweet-flavoured red variety ; Sutton's Giant Red, grows to an immense size, but stalks are of delicate flavour and a dark red colour. One of the best for keeping and maintaining late supplies ; Sutton's A.L., a dwarf variety of splendid flavour, ready for use early in the season, but remaining solid, and hard until quite late if need be. A deep red colour ; Sutton's Sulham Prize, grows to medium size producing solid, crisp stalks of nutty flavour ; Sutton's Superb Pink, one of the easiest to grow, with stalks a nice pink colour, of good flavour ; Major Clarke's Red, solid and crisp, and of excellent flavour ; Leicester Red, of compact habit, and medium size.

Rhubarb for Succession and Forcing.

Although Rhubarb is an accommodating vegetable and can be grown either in sunshine or partial shade it undoubtedly responds to careful cultivation. The finest, juiciest sticks of rhubarb are pulled from plants that have been established for about three years, but it is possible to get sticks of useable size the first season by planting good, large clumps in the autumn, or winter, if the soil has been well dug and manured, and is free from frost.

The clumps of rhubarb sold at most nursery shops are far too small, and immature to produce thick sticks for two or three seasons. Where quick results are wanted, the best plan is to go to a reliable nurseryman or market gardener, and purchase large, well-grown clumps from him.

Having prepared the soil by digging, and manuring—if stable manure is not available, vegetable manure and refuse will be better than nothing—make a hole fully large enough to contain each clump. Place the clump in the hole, taking care not to injure the forked, soft roots, and fill in light, richly manured compost carefully, treading in lightly, before filling in finally. Any leaf sticks on the plant, unless they are short ones just sprouting, should be pulled off before planting. They are certain to wither if left on. Pile loose compost over the top of the crown so that the scarlet tips of the new buds just show. Water well, and continue to water, sparingly, every night ; unless, of course, rain or frost sets in. Should the latter conditions prevail, cover the crowns with an old bucket, box, sea kale pot, or similar protection, first putting over the root some dry straw, or other light litter. This method may be used for forcing tender sticks of rhubarb in winter and early spring. Some stable manure around the crown, but not over it, hastens development still more.

Rhubarb from Seed.

Formerly rhubarb was propagated invariably from root division, a method that is still practised, and when it is followed, or one of the ordinary varieties of rhubarb are raised from seed, the sticks should not be pulled for the first season.

With Glaskin's Perpetual Rhubarb, however, seed may be sown, and sticks ready to use developed in six months' time. The propagation of this, and other varieties, such as the well-known Deep Red Victoria, is not a difficult matter. The seed should be sown in boxes, or in seed pans, without artificial heat, in a light, rich compost in March or April ; or in drills in the open ground towards the end of April. Transplant the seedlings to about two feet apart in a well-manured soil in May, and do not allow them to suffer from dryness. As they develop occasional applications of weak liquid manure will prove beneficial. When the Perpetual rhubarb is grown on good, rich loam that has been manured it remains in bearing condition over a long period. The ordinary rhubarb, of course, becomes dry, and decidedly flavourless with the advent of the warmer weather.

Rhubarb may be forced artificially indoors by lifting good, large clumps in October, and leaving them to dry for two or three weeks on the open ground. They should then be placed in deep boxes in a warm cellar, or under greenhouse staging, loose soil being filled in around the roots in the boxes. With this treatment a supply of tender sticks for winter and early spring use can be maintained.

The Cultivation of Pot Herbs.

Pot herbs (as distinct from sweet herbs, such as lavender, which are cultivated for their aromatic perfumes) are so many that one might devote an entire book to details of their cultivation. Here, therefore, we propose to deal in particular with just those few that are in most regular use in the kitchen.

Foremost among these is Parsley, extensively used in soups, sauces, and garnishing. At the outset it may be said it is useless expecting nice, curly parsley, even from the most careful cultivation, unless seed of a good variety is sown. Here are a few to choose from:—Dobbie's Exhibition, Dobbie's Champion Moss Curled, Fern-leaf Parsley, an old and hardy sort; Double curled, a large and free-growing type; Sutton's Dwarf Perfection, a variety of particular value for early spring use.

Parsley for use in summer should be sown in February and March outdoors; or in heat in January. For winter use sowings should again be made in June, in drills fourteen inches apart. For ordinary households, one row several yards long, will maintain a plentiful enough supply, as the plant sends up fresh leaves whenever the matured foliage is cut down. Parsley is not particular about soil, but it is less a plant of the shade than most gardeners seem to think, for one often sees it tucked away in dank, out of the way corners, and the gardener wondering why it looks weedy, and yellow, instead of brilliant green and crisp, as it should grow.

Growing Good Parsley Quickly.

Now, the conditions favourable to a quick growth of good parsley leaves are, a fairly sunny, sheltered border of deep, rich, clayey loam. To grow large plants, thin out the seedlings to from eighteen to twenty inches apart in the rows. Give frequent (twice weekly or so) applications of weak liquid manure, and soot water, using these stimulants alternately. Soot water is an exceptionally good stimulant for parsley. So is soapy water—cold, naturally. Should the leaves begin to turn yellow, repeated applications of sooty water will generally set matters right. Always keep the soil well weeded, and open, by free use of a hand fork, around parsley.

Mint is scarcely less popular than parsley for culinary purposes. A shady, and even water-logged position suits mint capitally, but it will grow anywhere, and increases at an alarming rate in moist situations. It is propagated from rootlets (almost immediate results from spring to autumn) or from seeds, sown in springtime. Mint for winter use can be obtained by taking up some roots in autumn and planting them in a box of loose, yet not dry soil. Place this in a light shed, or under the staging in the greenhouse where it is not too dark or the young leaves will be yellowish in hue, and not what is wanted, in colour, for mint sauce.

Growing Thyme and Sage.

Thyme and Sage are generally spoken of together since both are much used in savouries and stuffings, but they have no botanical relationship, and their culture is not the same.

Garden thyme for culinary purposes is easily grown from seed sown any time (no pun intended !) from spring to autumn, in any good garden soil, and in a position that is not too shaded, or damp. Thin out the young plants to six inches apart each way, and they will quickly make bushy little shrubs that will remain in use for years if regularly cut. Thyme may be propagated also from cuttings taken with a heel (that is to say, torn off at the juncture of a side branch with the main stem so as to leave a triangular-shaped fragment of bark and wood) and inserted two inches or so deep in sandy soil in spring or autumn. But, for culinary use, seed produces as quick results as cuttings.

Sage grows as a tallish, shrubby bush when fully developed.

One such bush will provide enough leaves for the kitchen of the average household. It is quite easily propagated from cuttings, preferably with a " heel," inserted three or four inches deep in light soil in the border, in spring or autumn. Old Sage bushes become somewhat straggly and unsightly, and should either be cut well back in spring, or else new ones should be raised every third year or so from cuttings. Sage can be grown from seed sown in spring or summer, but growth is much slower than from cuttings, which will supply plenty of leaves in two or three months.

The long, straight roots of Horse-radish most appreciated for culinary purposes are obtained from crowns inserted in spring in loose loam that has been filled into a deep, round hole, made with a crow-bar, as for beetroot cultivation. The horse-radish likes a rather heavy land, but as with most root crops, manured soil is not advisable, as the roots, instead of remaining long and straight, will then split and fork in small, thin pieces which are irritating to scrape down or grate. It should be remembered that horse-radish is a most vigorous-growing plant, and may become a garden pest very readily unless kept strictly within bounds. It is therefore best grown in some out of the way corner of the garden where its exuberance can be easily checked when need be.

Some Other Kitchen Herbs.

The following culinary herbs are less commonly employed in cookery nowadays, but they are nevertheless useful and are superior when gathered freshly from the garden than when used as dried and powdered herbs, such as are sold in bottles.

Sweet Basil, and Bush Basil are both half-hardy annuals used for flavouring highly-seasoned dishes. They are grown from seeds planted in heat in March, or else outdoors from late April to May. The young leaves of Borage make an excellent salad. The plant is a hardy annual and may be sown outdoors any time from the end of March to May. Chervil is also esteemed for salads. In its habit of growth it resembles parsley, and should be cultivated on similar lines. It is a biennial and the seed should be sown in May or June, the young plants being transplanted in September. The leaves of Fennel are used in fish sauces, while the seeds are used as flavourings in confectionery. It is a perennial, and may be propagated from slips, or seeds sown at any time during the summer, transplanting the young plants to eighteen inches or so apart in September. The mid-rib of Angelica can be eaten like celery, while the stalks and flowers are used (candied) in confectionery. It is a biennial and should be grown from seeds planted in June or July, transplanting the seedlings in September or October. Anise is a useful garnishing and seasoning herb, and is easily grown from seeds planted in March or April. It is a hardy annual. Pot Marigold is known in the flower garden as Calendula. It is a hardy annual revelling in a sunny position, and light, rich, sandy compost. It should be sown in March. The highly coloured flowers are used in colouring soups. Green Purslane and Rampion are hardy annuals used in salads, and should be sown in March and April for use the same season.

Summer Savory and Winter Savory are both used for seasoning and flavouring soups, etc. The former is a hardy annual, and as such is grown from seeds sown in April; the latter is a perennial which may be propagated from seeds sown in summer, and transplanted in September; or else from cuttings inserted in sandy soil in spring or autumn. Sorrel is a perennial herb yielding large, rather strongly-flavoured leaves which are sometimes liked in salads and soups. The seeds should be sown in summer, and transplanted in autumn. It likes a rather moist situation.

Chives are used as substitutes for onions in soups, like Garlic; also in salads. The clumps of both these perennial herbs should be lifted and divided every three or four years. Garlic can be cultivated (and repays the care) much in the same way as onions.

10.—Quickly-grown Asparagus, Kohl-Rabi, Celeriac, Sugar Corn (Maize), Salsify, Scorzonera and Artichokes.

To obtain quick results in growing Asparagus a start must be made with three-year old roots obtainable at most large nurseries. It will be a decided advantage if the ground can be prepared, and the beds got ready for the reception of the plants, in March or April, the previous autumn. Failing that, the preparatory work must be done as long before planting as possible.

The ground should be trenched, or deeply dug, forming beds about five feet wide, with alleys between (to avoid treading upon the soil after the beds are planted) in the sunniest and most sheltered site available. Incorporate plenty of well-rotted manure in the soil during the digging. A good sprinkling of coarse kitchen salt is also beneficial, likewise some dry soot. While deep digging mix with the soil at the bottom of each bed basic slag, or kainit, at the rate of about half a pound per square yard. This treatment will make certain of a good food supply for several years ahead after which (a well-planted and well-made asparagus bed may last as long as twelve years in bearing condition) the beds must be re-made, and re-planted if the yield weakens in quality and quantity.

Leave the beds thus prepared fallow for as long as possible, or until the proper planting season in March or April. Before planting, turn over the top spit of soil, mixing in well with it some superphosphate of lime at the rate of a pound to ten square yards, with a further sprinkling of coarse kitchen salt.

Make rows of small trenches, a foot apart, for the reception of the three-year old plants from the nursery. The plants are put into the trenches about a foot apart, spreading the roots carefully, covering them in loosely with the soil removed in making the trenches. They should lie about four inches beneath the surface. A loose surface of the soil is most necessary at all times in the asparagus bed, and in late autumn, after the growths have been cut back, the beds should be protected by a dressing of strawy manure, and a good three inches of soil spread on top as a protection against frosts.

Asparagus from Seeds, for Succession.

From the above directions for the cultivation of asparagus it will be seen that the vegetable (which is a perennial) is not one to bother about cultivating unless the gardener is likely to be in occupancy of the house for several years; or unless he is one of those exceptionally rare altruistic individuals who do not mind sowing (good things and deeds, of course!) that others may reap! This realised, it may be pointed out that the year following the making up of an asparagus bed or beds, with plants from the nursery, and with an eye to less expensive methods to secure a continuance of succulent stalks, seed may be sown in drills an inch deep, and one foot apart any time from March to June.

For seedling asparagus the ground should not have received

manure for some time previously, and when the seeds have been covered with soil they should be pressed in firmly, using a board or similar flat tool to ensure thoroughness and even pressure. The young plants do not come into bearing condition until their third year, and the usual plan is to sow seed every second year or so for the making of fresh beds, or the re-making of old ones. It may be pointed out that it is not of much use attempting the cultivation of this vegetable in dry, shallow soils.

Growing Kohl-Rabi.

Kohl-Rabi, or Knol Kohl, is less used here for human food than in France, where specially fine garden qualities are cultivated. Here coarse, large field sorts are the main kinds grown for feeding cattle. Actually it is a most useful vegetable, the roots being edible as turnips, while the leaves can be boiled as a green vegetable. The roots are most valuable in hot, dry seasons when the ordinary turnips are so apt to become tough, fibrous and unpleasant in texture when cooked.

Cultivation is on similar lines to that advised for turnips. Seeds may be sown at any time from March to August, in drills one and a half to two feet apart. Thin out as soon as possible to three inches apart in the rows (leaving the biggest plants) and then to nine inches apart, again leaving the biggest roots for final development. The roots are ready for use three months after sowing. A stiffish, well-drained soil suits this vegetable best. Good varieties to grow are:—Sutton's Earliest White, Sutton's Earliest Purple, Short-top Green, Early Short-top Purple.

Easily Grown Celeriac.

Celeriac, or Turnip-rooted Celery, is another French vegetable of much utility value, and not difficult to grow. Those who appreciate Celery as a cooked vegetable will find Celeriac even more delicious in flavour. The stalks may be employed as a component in salads and the root may be cooked, in the same manner as beet. Celeriac is not nearly so troublesome to cultivate as Celery, although it is best when raised in heat in March, being hardened off and transplanted outdoors in May. Though not particular as to soil, it certainly gives best and quickest results when the soil has been deeply cultivated and enriched with manure some time before planting. Plant out in rows two feet apart, and allow eighteen inches between the plants in the rows. Keep well hoed. Earth up in autumn when the plants are reaching maturity to blanch the stems. Lift before frost, removing all leaves other than those in the crown centre, and store the roots in a frost-proof place in sand or ashes.

The Toothsome Sugar Corn (Maize).

This popular American vegetable is not difficult to cultivate in this country if the seeds can be germinated in heat at a temperature of not less than 60 degrees Fahr. Sow the seeds, singly, in two-inch pots, transplant into three-inch, and harden off for planting outdoors in May. Deeply worked, well-manured soil is necessary, and the rows should be three feet apart, the plants being inserted two feet apart in the rows. Keep well-hoed, and allow plenty of water—Maize can scarcely be kept too damp—and feeds of weak liquid manure to ensure the quick growth that makes for sweet cobs. Good sorts are Early White Cob Cory, and Morse's Golden Cream.

Salsify and Scorzonera.

Salsify, or Salsafy, is really a triple-use vegetable, being grown for its roots which are stored, and used in winter in the same way as parsnips, for its leaves which may be used as a salad during the growing period, and for the tender flower shoots that appear when the roots are left in the ground, and that are cut and used like asparagus.

The cultivation is a simple matter. Sow the seeds from the middle of April until the end of May in a good light, rich soil, in drills fifteen inches apart. Thin the seedlings out to a foot apart in the rows. After that the main thing is to see that the plants are well watered in dry weather, and to keep the rows well hoed and weeded.

Scorzonera is cultivated in a similar way to Salsify, but for it one sowing, in the second week of May, will be found sufficient, as a rule.

Globe and Jerusalem Artichokes.

To obtain results the first season from Globe Artichokes, it will be found advisable to obtain suckers from good plants at a nursery, or market garden, for although this vegetable may

be grown perfectly well from seed and is, indeed, largely raised in that way, much time is saved by the use of suckers, or young plants right off.

Plant the suckers in a part of the garden that has been well dug, and that is open, and gets a good amount of sunshine. If the soil is of heavy, retentive nature it must be well trenched, and drained. Incorporate with it some thoroughly rotted animal manure, or vegetable manure, and in this rich compost insert the young plants about the beginning of June, placing them three to four feet apart each way. For the next season's crop propagation may be effected by taking suckers from the best plants in spring, and proceeding as before.

To raise Globe Artichokes from seed, sow in a mild heat such as that of a frame over a hot-bed, in March. Pot the young plants in three-inch pots when big enough to handle comfortably, and grow them steadily, hardening off to plant out in soil prepared as already described early in June. To make sure of nice strong plants it is usual to plant the seedlings in groups of three or four at the distance apart, between the groups, given for single suckers. In a week or two all but the strongest seedling should be removed.

Unlike Globe Artichokes the Jerusalem Artichoke ripens its crop underground as a tuber. In the older types this is much bulged, and carbuncled in shape, so that preparation for the table is a bothersome affair, although the flesh, well cooked (after the fashion of boiled potatoes) and served with a white sauce, is delicious, and quite unusual in flavour. However, a new type has been evolved, which is of a shape more acceptable to the kitchen, the

Globular-shaped Jerusalem Artichoke.

On the surface this sort is still somewhat knobbly, like the old type, but the shape is globular, not unlike a white stone turnip, and but little more trouble to prepare for cooking. A good variety in this type is Daniels' White Mammoth, which has a pure white skin—the old type is pinkish—and is of excellent flavour.

The cultivation of Jerusalem Artichokes is not a difficult business, the main consideration being deeply dug ground, and a good admixture in it of thoroughly rotted manure, either stable or vegetable, preferably the latter. Plant the tubers singly in rows, eighteen inches apart in the rows, which should be about the same distance apart. Tall stems are thrown up, with foliage that recalls sunflowers of the annual varieties with rather small leaves. Owing to the height—about three feet—to which these stems grow light between the rows is practically shut out so that there is some waste of space as low-growing, surface crops, or greens, cannot be planted between the rows, as with potatoes, or tall-growing peas or beans.

However, it will be found that the plant itself yields fruitfully, and from each single tuber planted in March or April there should be dug up in the autumn a bunch of tubers reminding one of a well-grown root of small potatoes.

During the summer the ground between the rows should be kept weeded, and it will be an advantage to the formation of large bunches of tubers if the rows are earthed up, like potatoes. But if earthing up cannot be undertaken there is no need to worry over the matter as there would be in the case of potatoes, for the artichokes will form clumps of tubers, though of inferior size to what they would have been if earthed up in a reasonably moist season.

SPECIAL FEATURE

MUSHROOM GROWING FOR HOME USE OR SALE TO LOCAL TRADERS

Delicious mushrooms gathered fresh from the bed for use in the home, with a ready sale for any surplus there may be, is an ideal that can be attained by all having even the smallest garden or shed, always providing that horse manure is to be had for the making of the beds, for this material is essential for successful mushroom growing.

Mushrooms may be grown either under cover or in the open if the right methods of culture are adopted.

Let us begin at the beginning and show how anyone possessing a garden, cellar or shed of any kind may grow at least sufficient mushrooms for the home.

To be successful with this crop, the right materials and the thorough preparation of these are everything. If these are dealt with in the right way one need have little fear for the crop. This will make its appearance in due course.

Manure and its Preparation.

The first necessity is horse manure for mushroom grown in beds, without a supply of this it is not worth while starting unless one has a paddock near the house in which case it is possible to grow mushrooms in this. The best kind of horse manure for the purpose is that from stables where the horses have been fed on hard corn and hay, and where the stables have been littered with straw. If other material has been used as litter the manure will have no value for mushroom growing.

Having obtained the manure it must be stored and the method of storing is important, for it is possible to spoil manure for this purpose by careless storing.

It sometimes happens that a sufficient supply cannot be obtained all at once. If this is the case the manure should be stored in a heap having very steep sides so that rain runs off freely. The heap should have a hole down the centre for ventilation.

If a drain pipe is stood on end and the heap built round this, and as soon as it approaches the top of the drain pipe, the latter is raised, finally on the completion of the heap being removed, satisfactory ventilation will be assured. If it is intended to grow large quantities of mushrooms, a ridge shaped heap having steep sides should be built with holes at intervals along the length of it for ventilating purposes.

When beginning to prepare the manure for use, an equal quantity of the oldest and the newest should be thoroughly mixed together, this will not heat quite as freely as if all new manure is used, but it will hold a suitable heat longer and will also need less preparation.

The preparation of the manure is one of the most important operations in connection with mushroom growing, whether the grower wishes to grow few or many. A piece of soil which is as dry as possible or an open sided shed may be used for the purpose. The manure is forked over, every lump being broken up and shaken out. When the manure is being shaken out in this way some dry patches will most likely be found. Such dry patches of manure must be watered, not so that they are saturated but so that they become nicely moist. Water is best sprinkled on in the form of a spray.

As the manure is shaken out and watered it is again heaped up. The heap as it progresses is beaten fairly solid and should have sloping sides to throw off rain.

After a few days it will be found that the heap of manure has heated a good deal when it should be dealt with again in exactly the same way as at first. Dry patches may be watered once again, or if it is on the dry side the whole of it may be well sprinkled in this way, but on no account should it be watered more than twice or it will deteriorate in value for mushroom growing.

When turning and shaking manure in this way that on the outside of the heap when beginning the work should be thrown to the centre. It is possible that two turnings and shakings will be all that is necessary to get the manure in condition for use. To be in the right state it should be moist, but not wet enough for any water to be squeezed out of it, an even dark brown colour, should have very little smell and there should be no lumps at all.

If the manure has not reached this condition after the second turning, it may be necessary to turn it and shake it out once or twice more, after intervals of a few days, but no water should be applied if this is done.

Making the Beds.

The question as to where beds are to be made will have been decided. Should these be in the open air ridge shaped beds will be advisable. If under cover the beds may be flat or dual ridges may be used. It is a matter of getting the most growing space from the manure possible.

Should very little space in shed or cellar be available, mushrooms may be grown on hanging shelves.

It is not always possible to provide shelter on the north and east for ridge beds, but where it is possible to build the beds where they are sheltered in this way it should be done.

Perhaps the chief consideration when making the beds is the solidity of these. It is quite out of the question to get mushrooms to grow in beds of loose manure, and even where the manure is partially loose the same success will not follow as will be the case if the manure is really solid.

The method of making a ridge bed is to carefully stake out the length and width that this is intended to be. The ground should be level and firm. A layer of the prepared manure is placed evenly over the ground and trodden well down, a second layer is placed in position and treated in exactly the same way, care being taken to bring the manure gradually to a slope so that the bed is ridge shaped when completed.

Mostly ridge beds are made during the summer in which case they should be two and a half feet across the base and the same height. It is possible, however, to grow mushrooms on ridge beds out of doors throughout the whole year. When built for winter production the beds should be three feet or three feet six inches across the base and the height should be equal to the width.

The ridge should not be brought to a pointed edge but should be in the form of a flattish curve about six inches across.

When completed the sides should be carefully smoothed down and beaten with the back of a spade so that a level slope is presented to the eye.

Flat beds are made in a similar way. The position of the bed is first carefully marked out and a layer of the prepared manure is spread evenly over the space to a depth of from ten to twelve inches. This is then carefully firmed by being trodden down, taking care that every inch of the space is covered in the treading. As with ridge beds the depth that flat beds should be made will depend upon the season of the year and to some extent upon whether the structure in which they are growing is or is not heated. During the summer months the beds need not be more than seven or eight inches thick, but during the winter in unheated structures they will need to be about fifteen inches thick. In heated structures during the cold months of the year the beds should be about eleven or twelve inches deep. When the bed is completed it should look level to the eye.

It is rather difficult to get the manure for beds made on hanging or fixed shelves sufficiently solid, the most satisfactory method being to well beat it with the back of a spade. The size of such beds will depend upon the size of the shelves on which they are made.

If the beds have been prepared as described the temperature of the manure will begin to rise and will continue to do so for several days. It sometimes happens that the bed gets very hot, in which case ventilating holes should be made with an iron bar, the holes being from a foot to eighteen inches apart.

The Spawn.

Before the spawn is put in the heat three inches below the surface should not be higher than 80 degrees. If it is nearer seventy so much the better.

It is impossible to be successful with mushrooms unless spawn of good quality is used. Modern methods of spawn manufacture by firms specialising in this ensure that the spawn should be as reliable as it is possible to make it. To get good results the spawn should be obtained from a firm with a reputation to lose.

If brick spawn is used this should be broken into pieces about the size of a hen's egg. If pure sterilised spawn is used and this is strongly recommended, pieces the size of a walnut will be suitable. The spawn is spaced nine inches apart, the pieces in one row falling between those in the next row. The spawn is buried about an inch and a half deep and the manure should be firmly pressed round the pieces after they are inserted. This is important. When the work of inserting the spawn is finished, the whole should be nicely levelled.

The next question to decide is the variety or class of mushroom to be grown. These may be divided roughly as follows: White, Cream and Brown. For those beginning with the work, Brown should be chosen, as they are far more hardy and likely to grow under adverse conditions than are either the Cream or the White. The White is most delicate and everything must be exactly right if a good crop of White mushrooms is to be harvested.

Casing.

When a choice of variety has been made and spawning is completed, beds in the open should be covered with litter to keep out the weather. Nothing further should be done for about a week, when the bed or beds should be given a covering of soil. This is known to the professional grower as casing.

Flat beds in sheds or cellars offer no particular difficulty when the time for casing arrives. Most of us have to make use of such soil as is available for this purpose, but it may be mentioned that where there is any choice the most suitable soil is a good loam mixed with which is a fair proportion of fibre. Soils to avoid are those of a peaty nature or those that have been recently manured. Flat beds are covered evenly to a depth of about an inch and the soil is beaten down reasonably firmly with the back of a spade.

Covering ridge beds with soil is not nearly such an easy business especially for amateur gardeners who have had no experience of the work. The soil covering for a ridge bed is usually put on rather thicker at the bottom than at the top. Mostly a two inch covering will be about right for the base of the ridge, the thickness gradually reducing until there is only three-quarters or a half an inch of thickness of soil at the top. To get the soil on the beds properly it should be damp but not really wet. When the lower part of the ridge bed is covered the soil is firmed with the back of a spade and the next section of the bed is dealt with in the same way.

When the bed has been covered with soil, if it is in the open air it should at once be covered with litter. The thickness of this litter covering will depend upon the time of year and the weather conditions. In the summer or during a warm spell of weather the covering need not be more than five or six inches thick. During very cold weather as when mushrooms are grown out of doors in winter, it will need to be nearer two feet thick. If the beds are in unheated sheds, they will not need covering in fairly mild weather but as the weather turns colder a covering of litter should be applied. Grown in heated houses no litter covering is necessary. For a short time after spawning has been carried out the heat of the beds should be tested daily. This will not be necessary later. A thermometer made especially for the purpose may be used or a piece of stick may be pushed into the bed, allowed to remain for a time and felt when it is taken out. If the bed is too hot some of the litter covering should be taken off.

Watering.

While it is necessary to keep mushroom beds moist, water must not be given in such quantity that the manure is made wet or the beds will be ruined. It should not be necessary to water at all for the first month after the casing has been put on the beds. Whether or not the beds should be watered then will depend upon the condition of the soil covering. If this is getting dry the beds should be watered, but if the casing is still wet no water need be given until after the first batch of mushrooms have been gathered. The water should be tepid and if, as is often done, it is applied over the litter, sufficient should be given to soak through the litter covering and moisten the soil, but on no account should the beds be so freely watered that the water soaks through the soil and reaches the manure. When the crop begins to fall off the beds may be watered with water to which a small quantity of saltpetre has been added or with a weak solution of guano, the soil should be well saturated with this and will usually receive a new lease of productive life.

Mushrooms in Lawns or Pastures.

If you find it is possible to get only small quantities of stable manure, and it is desired to have a supply of mushrooms for home use, these may be grown on a lawn or in any kind of

pasture if this is available. The method of growing mushrooms in this way is very simple. Squares of turf are carefully removed to a depth of about two inches and at the spot from which the turf has been taken a hole about ten inches deep is dug. The hole is filled with stable manure mixed with loam at the rate of half a bushel of sifted loam to each barrow load of manure. The hole is filled to within about an inch of the top with this mixture. A walnut sized lump of spawn is then buried to a depth of about an inch in the centre of the hole, the manure being pressed firmly round it. The turf that was taken off in the first place is then put back in position and the whole is well firmed. Holes made in this way should be about a foot apart.

If still less manure is available the holes are made from four to six inches deep a small lump of manure is placed in each hole and in the middle of this is placed the mushroom spawn. The turf is put back in the same way as previously described and the whole is well firmed. Treated in this way the holes should be from fifteen inches to a foot and a half apart.

SPECIAL FEATURE

HOW TO GROW TOMATOES

Open Air Culture.

Almost every amateur gardener likes to grow tomatoes. If he has no glass to give protection to the plants and to ripen them reasonably early, he selects a sheltered position in the open, buys a number of plants and puts them in, when, unless the weather proves very unfavourable he will have home grown tomatoes at the end of the season. Those who have glass, if heated, can begin to gather tomatoes at the same time that those home grown commercially begin to appear on the market, while those who have unheated glass will wait a little longer before they can put home grown tomatoes on the table.

Perhaps it will be as well here to begin with the outdoor culture of the tomato, and believe me there is no other method of cultivation that will give such a delicious flavour as can be obtained in this way.

Out-of-doors tomatoes may be grown on almost any kind of soil, if it contains a reasonable quantity of plant food. Light sandy soils and heavy clays will both grow plants to produce good crops as will also soils between these. It will be necessary to thoroughly work the land intended for this plant to a good depth, to see that it is well drained and to keep it compact. First, however, the situation should be chosen with care. As the tomato is a sub-tropical plant it will not succeed if it is exposed to the colder winds. The ground should be prepared early so that it gets well weathered and in good condition to receive the plants.

The second question to decide is whether it is advisable to raise the plants at home, or whether these should be bought ready for planting out. If manure and other materials are available for making a hot-bed there is no doubt that raising the plants at home is the most satisfactory method.

A mild hot-bed made during the second fortnight in February or the first week in March will provide accommodation for the seed. The hot-bed should be made of fresh stable manure if this is available, the manure having been turned a few times to sweeten it. If fresh stable manure is not available and farmyard manure can be obtained, this will have to serve. The bed should be two feet deep and should be covered to a depth of three inches with good loam. The seed may either be sown directly in this loam or in pots or boxes standing on it. If at all possible boxes should be used, but holes should be made in the bottom for drainage. The boxes should be filled with a light sandy loam. Leaf mould, loam—both sifted—and sand or finely sifted ashes in equal proportions. If old hot-bed or mushroom bed manure is available this may be sifted and used in place of the leaf mould if desired.

Seed Sowing.

The boxes should be filled the last week in February, soaked with boiling water and allowed to stand until the first week in March, which is the best time for sowing the seed. The seed is sown in drills which should be an inch apart and a quarter of an inch deep. Thin sowing is advisable and after the seed is sown it should be covered with soil which should be carefully firmed. The boxes are then placed on the hot-bed. The lights are put on and are covered with sacks, mats or litter, which remains on until germination begins. Ventilation should be given only on mild days and watering with tepid water should be carried out with a good deal of caution. It is far easier to get the seed boxes too wet and ruin the whole of the plants, than too dry.

When the seedlings are big enough to handle they should be carefully thinned out to a half inch apart leaving the strongest plants, and as soon as two rough leaves form they should be transplanted into other boxes at a distance of two inches apart each way. About half fibrous loam should be used to fill the boxes, the other materials being reduced to a quarter each. The compost should be well moist but not wet. It is important to insert the young plants in the soil almost up to their seed leaves, and also to handle them gently.

About the end of April the young plants should once again be transplanted four inches apart each way in boxes or singly in pots. They do not need a hot-bed now, but some protection from frost should be provided. Water carefully and if two stems are required to each plant, pinch out the top when transplanting.

As mentioned earlier, if it is not possible to grow the young plants from seed, these may be purchased, care being taken to buy only strong, sturdy, well hardened plants.

Planting Out.

Time for planting out is important. Most of us are too impatient, and given a few warm days we like to get the plants in the open at once. This is a mistake. If the plants have been treated as suggested they will be sturdy and short jointed, just right for producing an excellent crop in the open. It would be a pity to ruin the chance of getting a good yield by putting them out before the weather is nicely settled, in this way causing a serious check.

The best time to plant out, if the weather appears to be settled, is during the first half of June. To do the work earlier than this is almost always a case of " more haste less speed."

First, see that the ground is well prepared, next see that the roots of the plants are well moist before they are taken out of the boxes or pots for planting out, lastly do not plant too deeply, the ball of soil on the roots should not be buried more than a half inch beneath the surface.

Grown on a single stem the plants should be about a foot and a half apart, on a double stem there should be about two feet six inches from one plant to the next. Some support will be needed and as the plants make growth they should be carefully relieved of side shoots. This should be done before the side shoots have grown to more than an inch or so in length or it will prevent the plants fruiting as they should. It will be necessary to go over the plants at regular intervals for the removal of these. Tying should also be seen to at regular intervals.

The base of the plants should be kept free from weeds, and water should be given as and when necessary. During the first fortnight in August the plants should be stopped. Stopping consists in cutting the stem or stems back to the last matured cluster of blossom. After stopping, side shoots should still be regularly removed if good quality tomatoes are to be gathered.

The Foliage.

As the fruit forms the method of dealing with the foliage is important. Often when the fruit begins to form this is severely thinned, so much so that little or no foliage is allowed to remain on the plants. This is a mistake. No plant can bring its fruit to perfection unless enough foliage remains on it to properly feed both the plant and the fruits. When the tomatoes on the bottom truss begin to change colour all fruits below this are stripped off as is also the lowest leaf above the truss. As tomatoes on the next truss upwards begin to change colour the leaves below this are reduced to half their length, and other leaves higher up are reduced in length in the same way, as the fruits on the higher trusses begin to turn red.

Birds are sometimes troublesome, pecking the tomatoes low down on the plants, and these are best taken under cover to ripen. Unless very late in the season the remainder may be allowed to ripen on the plant before being gathered when ready for use.

Early Tomatoes Out of Doors.

It is possible to get outdoor tomatoes ready very early in the summer, if the plants are provided with some protection. The same rules apply for sowing the seed except that this is sown earlier, the middle of February being about the right time. Bottom heat will be wanted to keep the plants moving so that strong plants are available for planting out by the second week in May. Before planting a fork full of manure is placed under the roots and after planting each plant is covered by a cloché. The cloché is held up on stilts in the form of four notched sticks and as the plant grows the cloché is raised one notch higher until early in June when it may be removed altogether.

The best varieties for outdoor culture would not of necessity be the best for indoor cultivation. Carter's Sunrise is an excellent variety for growing outside, Up-to-date is another, and Princess of Wales a third.

Tomatoes Under Glass.

Those who have a cold or heated greenhouse available will no doubt wish to grow at least some plants under such protection, so that they may have a home supply as early as possible.

We will deal first with the cultivation of tomatoes in a house where there is very little heat. The seed should be sown during the first week in February, in boxes, in the same manner as if they are to be grown out of doors. It is a good plan to cover the boxes with a sheet of glass and to cover this with a sheet of brown paper. If no hot bed is available the boxes should be placed in a temperature of about fifty-five or sixty degrees. About the end of February the seedlings should be pricked out a distance of two inches apart each way into other boxes and kept in the same temperature for about three weeks when they will be ready to transplant into three inch pots. Sandy soil and sifted leaf mould should be used for the pots, but no manure. It is a good plan just before transplanting into pots to keep the temperature down to between forty and fifty degrees for a few days or to move the plants from the greenhouse to a shed where this temperature prevails. When transplanting into pots the young plants should be planted close up to the seed leaves. The reason being that by doing this the growth of sturdy plants is encouraged. They should also be placed quite close to the glass where they will get as much light as possible. The soil should be kept moist but not wet.

After they have been in the three inch pots for between two and three weeks they should again be transplanted, this time into six inch pots.

When the roots have well filled the pots, but before they are pot bound, they will be ready for putting in their permanent quarters. Perhaps this will be the greenhouse border, perhaps they will be grown in nine inch pots or in boxes, or perhaps the greenhouse staging will be made use of for the purpose. Whichever method is used, the plants should first of all be well watered, a day or so later they are knocked out of the pots and planted so that the balls of soil are covered to a depth of about an inch. It is particularly important that the plants be put in very firmly. Tomatoes grown under glass are mostly grown to a single stem, all side growths being pinched out. Whether wires or bamboo rods or any other supports are used for training does not matter a great deal.

In Heated Houses.

There is actually not a great deal of difference between growing tomatoes in a cold or nearly cold greenhouse and a heated structure. If the plants are to be grown in a heated house, before they are put out in the border, the compost forming this should be warmed, that is to say the house should have fires in it for a week or more before any transplanting takes place. If the fires are only put in a day or so before the plants, the roots will go into cold soil and are certain to receive a serious check.

It is not advisable to keep the temperature too high or no fruit at all will set. If this is maintained at round about seventy degrees at the time the blossom is ready to set fruit it will be just right, but there is a safety margin of ten or twelve degrees above or below this. The nearer it can be maintained to seventy degrees, however, the better.

The plants should be watered when necessary and the atmosphere should be kept moist.

For tomatoes in a greenhouse, the same amount of care should be exercised as for those growing out of doors. On no account should all the leaves be stripped from the plants, but these should be reduced so that the fruits receive the full benefit of all available light.

Top Dressing.

The best time to feed tomatoes by means of a top dressing of compost containing more plant food than that in which they have been planted is after they have set several clusters of fruit. The top dressing used should contain additional leaf mould as well as old hot-bed or mushroom manure, each plant should be given about a pailful of this compost which should be firmly rammed down. It should be applied when the original soil is moist and the new soil should be well watered after it is in position.

Tomatoes need ample supplies of air but they do not like a draught so that a good deal of care should be taken with the ventilation of the house in which they are growing.

Tomatoes in Frames.

Those who have neither a cold nor a heated greenhouse, but who wish to get earlier tomatoes than can be obtained from the open may try growing these in a frame or frames with every hope of success. One method is to fix a plank across the frame about twelve inches from the front or lower end of this. The trough so made is filled first with turfy loam, then with horse manure and old stable or mushroom manure and this is covered with compost such as is used when planting young tomatoes in boxes or pots and which is described earlier in this section. The method of planting is the same as when the plants are grown in a greenhouse, but the method of training must be altered somewhat to suit the size and limits of the frame. It is simply a matter of growing the tomatoes at an angle to the ground instead of upright. The plants may be planted in the frame at a distance of about fifteen inches apart.

As has been mentioned for tomatoes to be grown out of doors, those who do not find it convenient to grow their own plants from seed, whether for greenhouse or frame, may if they wish to do so buy sturdy plants ready for putting in their permanent quarters, but they should be sure to obtain these from a reliable source, or failure may follow.

Varieties.

The choice of varieties is an important matter. This has already been dealt with in the case of tomatoes grown out of doors, but it cannot be neglected in the case of those grown under glass. Our first purpose is to grow tomatoes for use in our own home. If there is a surplus we may wish to sell these but that is a secondary consideration. When picking a variety we shall therefore place quality first, so long as the yield is reasonably good and among those of good quality and when well grown good cropping capacity are Ailsa Craig, Carter's Sunrise and Best of All.

Kondine Red is a favourite with commercial growers because of its heavy cropping capacity, but the quality is not all that is desirable, and we may as well grow something worth while from this point of view.

The best remedy for diseases or pests of tomatoes is prevention. If the plants are given favourable soil conditions, proper feedings and watering as set down here, and care is taken that their growth does not receive a check when transplanting them, they are much less likely to be attacked by either disease or pest than is the case when they are not given the same amount of care and attention throughout their growth.

Should disease or pest attack the plants in spite of the exercise of the greatest care, I strongly advise the amateur to go to a horticultural chemist and to obtain from him a wash ready for use, with the addition of water. For the commercial grower it often pays to mix the washes for spraying at home, although many of these prefer to buy the article ready prepared. For the amateur it certainly is not worth while doing so. The quantity wanted will not be sufficient to warrant the time and trouble involved, and it is likely that washes mixed by experts will be far more effective than will a wash of the same kind mixed by one who is not used to this kind of work.

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